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ABSTRACT

The study investigated short-term effects of a cognitive education program (the Instrumental Enrichment program) on school-related behaviors of 197 mildly retarded, emotionally handicapped, and learning-disabled students, compared to 127 controls. Hypotheses were that Instrumental Enrichment (IE) students would show improvement in cognitive functioning and class/school behavior, while non-IE students would not; that 2-year subjects would show greater improvement on both functioning and behavior than 1-year subjects; and that mentally handicapped students would improve more than the other two groups. It was not possible to demonstrate that a significant effect resulted from IE training, as neither seventh-grade nor eighth-grade subjects showed an increase in academic performance or reduced absenteeism or behavior problems. The only statistically significant differences were found for schools attended, educational exceptionality, and race. The report summarizes and evaluates the project's first year activities and second year activities and offers a final report. Appendices contain summary statistics for study measures by levels of treatment condition, educational exceptionality category, sex, race, and school. (JDD)

FINAL REPORT

Field Initiated Research: A Field Based Study of the Effects of an Educational Program on School Adjustment of Mildly Handicapped Secondary School Students

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Wake County Public School System

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PURPOSE

The purpose of this study was to investigate short-term and long-term effects of a cognitive education program on school-related behaviors of mildly retarded, emotionally handicapped, and learning disabled students. Although the original project was written for a five year period, it was funded for 27 months. As a result of the 27 month grant period, this final report will present short term effects for the two years of the project. The effects of a specific cognitive education program, Instrumental Enrichment developed by Reuven Feuerstein (1979), were measured. Students participated in the IE Program during middle school (seventh and eighth grades). IE Program effects on cognitive functioning and school/class behavior during and immediately following participation and its effects on school adjustment during the first two years of high school (ninth and tenth grade) were determined.

Significance and Rationale

Instrumental Enrichment

Description of Instrumental Enrichment. Instrumental Enrichment (IE) is a content-free curriculum, designed to correct deficient cognitive functions of "retarded school performers" by providing them the prerequisites for learning. It is intended as an intervention which elicits and helps to organize thought processes for (and with) the older elementary school child and adolescent in, primarily, a group

setting. It is strongly anchored in a belief in cognitive modifiability -- i.e., the human organism is an open system, capable of change throughout the life span. IE assumes that failure to learn is not due to lack of innate ability, but rather to lack of sufficient experiences in fundamental, specifically defined thinking skills.

There are six subgoals which guide the construction of the exercises used and the application of the program. These include: (a) the correction of the deficient cognitive functions; (b) the acquisition of the basic concepts, labels, operations and relationships needed for mastery of cognitive tasks; (c) the production of intrinsic motivation through formation of appropriate habits; (d) the production of reflective, insightful, and introspective processes in the disadvantaged individual; (e) the creation of task-intrinsic motivation -- i.e., the enjoyment of a task for its own meaning as well as its social meaning; and (f) the development of attitudes in the learner which result in self-perception of self as a possible generator of information in addition to a user of information.

The "instruments" of the Instrumental Enrichment program consist of units, a series of paper and pencil tasks, each unit emphasizing a particular cognitive function. Each instrument, however, deals with a number of cognitive deficiencies and is aimed at contributing to all of the subgoals. The 500-plus pages of paper-and-pencil exercises are divided into fifteen "instruments" or units, fourteen of which are used regularly in the program. The curriculum

provides sufficient materials for a one hour session, three to five days a week, over a two to three year period.

The IE curriculum was chosen as an intervention to be studied for several reasons: (1) its assumption of cognitive modifiability; (2) its content-free curriculum which allows for application of the learning strategies to content areas; (3) its appropriateness for the age of the target population; (4) its delivery design which allows for improving the cognitive functioning of students identified as slow learners, educable mentally retarded, emotionally handicapped, and learning disabled.

Research Design:

To assess short-term effects of the IE intervention, a pre-test/post-test design was utilized. All students participating in the IE Program and those not participating were administered two instruments to assess cognitive functioning at the beginning of their first year of IE Program participation. Seventh grade students were administered the same instruments at the end of their second year of participation. Eighth grade students were administered the same instruments at the end of their one year of participation. To assess school behavior, three non-Project teachers of each subject (during the previous school year) rated student behaviors at the beginning of the first year of program implementation. Seventh grade subjects were rated by three non-Project teachers at the end of the second year of program implementation. Eighth grade subjects were rated by three non-Project teachers at the end of the one

year of participation: ANOVA was utilized for the analysis of the data.

Hypotheses. The hypotheses for short-term effects are the following:

1. IE participants show improvement in cognitive functioning while non-IE students show no improvement.

2. IE participants show improved class/school behavior while non-IE participants do not.

3. Two year subjects show greater improvement on both cognitive functioning and behavior than one year students.

4. EMH students improve more than the other two groups in both cognitive functioning and behavior.

5. Subjects in consultation and part-time placements across all categories make more progress in both cognitive functioning and behavior than do full time subjects.

Summary and Evaluation of First Year Activities

(Interim Report)

1984-85

Evaluation of Instrumental Enrichment Program

The Instrumental Enrichment (IE) program was implemented in the 1984-85 academic school year in selected schools of the Wake County Public School System (WCPSS). Seventh and eighth grade students receiving instruction in a special education class for one or more academic subjects participated in the evaluation of the effectiveness of the Instrumental Enrichment program. Students were randomly assigned to either a treatment or control condition. The treatment condition provided students with IE training in addition to instruction in other academic and supporting classes while students in the control condition received instruction according to a normal special education class schedule.

The evaluation study design provided for the collection of several types of baseline data including intellectual aptitude measures, behavioral ratings, course grades, and demographic variables from each student participating in the study. At the end of the first year, data collection involved the retesting of participating eighth grade students with one of the intellectual aptitude measures and the collection of end of year course grades. This purpose of this report is to provide a description of the students participating in the study using the baseline data and to also assess the effect of the first year of Instrumental Enrichment training on eighth grade student intellectual and school performance.

Data was available for a total of 324 students, 181 seventh graders and 143 eighth graders. Students were randomly assigned to IE treatment and control conditions within participating

schools. The numbers of students within each area of exceptionality for the two grades by treatment condition are listed below in Table 1.

Table 1 - Frequency of Exceptionality by Treatment Condition

Grade 7 Exceptionality

	EH		EMH		LD		
	n	%	n	%	n	%	Total
Control	6	8.4	5	7.0	60	84.5	71
Treatment	8	7.3	19	17.3	83	75.4	110
Total	14	7.7	24	13.3	143	79.0	181

Grade 8 Exceptionality

	EH		EMH		LD		
	n	%	n	%	n	%	Total
Control	4	7.1	20	35.7	32	57.1	56
Treatment	10	11.5	25	28.7	52	59.8	87
Total	14	9.8	45	31.5	84	58.7	143

As can be noted, the largest group of special education students participating in this evaluation research was categorized as LD or learning disabled and the next largest group of students were educable mentally handicapped (EMH) while the smallest group at less than 10 percent was the Emotionally Handicapped (EH). A comparison of proportions of students with each handicap within the two conditions at the two grade levels showed roughly the same proportion of control and treatment subjects within each exceptionality category thus providing evidence of the effectiveness of the assignment procedure. A comparison of condition by race showed roughly comparable percentages of blacks in the control and treatment conditions with blacks comprising 51

and 65 percents of the seventh and eighth grade samples, respectively. An analysis of the sex of the subjects by grades revealed males to outnumber females by about a 2:1 ratio and that roughly the same proportions of male and female students existed in the treatment and control conditions. The numbers of students in each of the race and sex categorizations are summarizied below in Table 2.

Table 2 - Frequency of Students in Conditions by Sex and Race

	Grade 7					Grade 8				
	Sex					Sex				
Condition	Female		Male		Total	Female		Male		Total
	n	%	n	%	n	n	%	n	%	n
Control	25	35.2	46	64.8	71	20	35.7	36	64.3	56
IE	33	30.0	77	70.0	110	31	35.6	56	64.4	87
Total	58	32.0	123	68.0	181	51	35.7	92	64.3	143

Table 3 - Frequency of Student Exceptionality by Sex and Race

Grade 7

	Sex					Race				
Except	Female		Male		Total	Black		White		Total
	n	%	n	%	n	n	%	n	%	n
EH	5	35.7	9	64.3	14	11	78.6	3	21.4	14
EMH	10	41.7	14	58.3	24	17	70.8	7	29.9	24
LD	43	30.1	100	69.9	143	65	45.8	77	54.2	142
Total	58	32.0	123	68.0	181	93	51.7	87	49.3	180

Grade 8

Except	Sex					Race				
	Female		Male		Total	Black		White		Total
	n	%	n	%	n	n	%	n	%	n
EH	3	21.4	11	78.6	14	8	57.1	6	42.9	14
EMH	26	57.8	19	42.2	45	37	82.2	8	17.8	45
LD	22	26.2	62	73.8	84	48	57.1	36	42.9	84
Total	51	35.7	92	64.3	139	93	65.0	50	35.0	143

Table 4 - Frequency of Students by Race and Sex for Grades 7 - 8

Race	Grade 7 Sex					Grade 8 Sex				
	Female		Male			Female		Male		
	n	%	n	%	total	n	%	n	%	Total
Black	29	31.2	64	68.8	93	37	39.8	56	60.2	93
White	28	32.2	59	67.8	87	14	28.0	36	72.0	50
Total	57	31.7	123	68.3	180	51	35.7	92	64.3	143

While the random assignment of students to conditions resulted in a balance of educational exceptionality within treatments, such was not the case for the relationship of exceptionality and the demographic variables of Sex and Race of the students. As can be seen from Tables 3 and 4, males were more frequently represented in each of the educational exceptionality categories at the seventh grade level and for two of the educational exceptionality categories at the eighth grade level; the EMH category had more females than males. An inspection of the race by area of exceptionality categorizations for the two grade levels revealed differential patterns of frequencies at the two grade levels. At the seventh grade level, white students were predominant in the LD category while blacks were relatively more frequent in the other educational exceptionality categories.

Blacks represented over half of students in the three educational exceptionality categories at the eighth grade level with a 4:3 ratio for both EH and LD categories but a 5:1 ratio for EMH students.

The data collection procedures for this study called for the collection of behavioral measures of students on a pre-basis with teachers providing ratings of students to the 19 scales of the Burks' Behavior Rating Scales form. These data were analyzed to provide a descriptive basis for interpreting improvement demonstrated by the students receiving the IE instruction. Of particular interest were differences in ratings provided by the teachers to students with different demographic characteristics identified in this study. Analyses of variance were conducted on the 19 scales using the treatment variable of IE versus control condition and the demographic variables of educational exceptionality, sex and race within grade level. Each scale value was subjected to three different analyses. The first only considered treatment condition and school while the other two included treatment condition and educational exceptionality along with either sex or race as the third variable in a three way design. Since differences among schools were likely an artifact of the adminstrative assignment of students needing special education instruction, the scales associated with a significant school effect will not be discussed in this report. However, the significant effects associated with the treatment condition and the demographic classification variables of education exceptionality, sex, and race are presented along with level means by grade in Table 5. The entire summary listing of scale means by the

design variables is provided in the Appendix of this report.

Table 5 - ANOVA Summary of Significant Burks' Scales

Grade 7

	Exceptionality Effect		Means		
Measure	F Value	p< .__	EH	EMH	LD
Burk 11	4.21	.05			
Burk 12	4.26	.05	12.28	7.75	8.99
Burk 15	5.36	.01	12.00	10.62	10.10
Burk 17	4.38	.05	12.00	8.09	8.12
Burk 18	5.80	.01	13.28	9.46	9.61

	Sex Effect		Means	
Measure	F Value	p< .__	Female	Male
Burk 7	13.59	.01	6.05	7.61
Burk 9	15.00	.01	9.91	13.05
Burk 10	6.33	.01	8.54	10.53
Burk 16	5.34	.05	6.61	8.33
Burk 17	11.66	.01	8.04	10.76
Burk 19	4.38	.05	10.60	12.87

	Race Effect		Means	
Measure	F Value	p< .__	Black	White
Burk 10	4.56	.05	10.64	9.10
Burk 11	9.38	.01	10.11	8.83
Burk 15	8.30	.01	9.30	7.42
Burk 17	9.76	.01	11.05	8.65
Burk 18	7.75	.01	8.94	7.15

	Treatment * Race Effect		Means			
Measure	F Value	p< .__	B-IE	B-C	W-IE	W-C
Burk 2			6.91	6.92	8.69	6.28

Grade 8

	Treatment Condition		Means	
Measure	F Value	p< .__	C	IE
Burk 4	4.12	.05	7.60	8.63
Burk 13	9.33	.01	5.79	7.03
Burk 17	7.13	.01	8.45	10.56

Table 3 Continued

Grade 8

	Sex Effect		Means	
Measure	F Value	p< .__	Female	Male
Burk 7	4.68	.05	6.42	7.44
Burk 9	6.98	.01	11.16	13.66
Burk 10	11.26	.01	8.52	11.51
Burk 11	7.59	.01	7.30	9.84
Burk 17	8.20	.01	7.96	10.74
Burk 18	4.02	.05	7.20	9.06

	Race Effect		Means	
Measure	F Value	p< .__	Black	White
Burk 2	4.18	.05	6.67	7.79

	Race * Sex Effect		Means			
Measure	F Value	p< .__	BF	BM	WF	WM
Burk 4	6.19	.05	6.92	6.52	8.43	7.53

Major differences in significant effects for the seventh and eighth grades were found for the Burks' Scales which are not readily explainable. Both grades showed several Burks' scales with significant differences in male and female means. However, there were five scales with significant educational exceptionality effects for the seventh grade students but none for the eighth grade students. Also, five Burks' scales for the seventh grade showed significant sex effects but only one Burks' scale had a significant sex effect for the eighth grade. No seventh grade differences in the Burks' scale means were found to be statistically significant, however three scales were shown to demonstrate statistically significant differences in IE and control condition means for the eighth grade students. In spite of the seeming inconsistencies between grade levels, the

differences found for classification variable level means were usually consistent across scales and explainable.

Significant educational exceptionality effects were obtained for the seventh grade scores on the Burk Scale of Poor Impulse Control (Burk 11), Poor Reality (Burk 12), Poor Anger Control (Burk 15), Excessive Aggressiveness (Burk 17), and Excessive Resistance (Burk 18). In all comparisons, the Emotionally Handicapped students were found to have had the higher means with the other two groups showing essentially the same mean rating level. It was not surprising to find that males were rated significantly lower than females by their teachers on Coordination (Burk 7), Academics (Burk 9), Sense of Persecution (Burk 16), Aggressiveness (Burk 17), and Social Conformity (Burk 19). The race classification variable means revealed the black students to have been rated significantly poorer than whites on the behaviors of Attention (Burk 10), Impulse Control (Burk 11), Anger Control (Burk 15), Control of Aggression (Burk 17), and Resistance (Burk 18). The race by treatment interaction indicated that white students assigned to receive the IE training were rated significantly higher on the Anxiety scale than the other three race-sex combinations.

There were fewer signficant Burk scale effects found for the eighth grade students in comparison to their younger colleagues. The eighth grade IE assigned students were rated to be significantly more dependent (Burk 4), have less of a sense of identity (Burk 13) and were more aggressive (Burk 17) than control students. Since students were randomly assigned to either receive

the supplementary instrumental enrichment training or the normal special education instructional program, it can be assumed that these are differences of chance variation. Indeed, an analysis of the three scales showing significant differences does not appear to provide a common pattern underlying the observed differences.

The finding of significant sex differences for the eighth grade students is easier to understand since several of the differences parallel those noted for the seventh grade subjects participating in the study. Males were found to have been rated significantly more likely to have a problem with the behavior described in the Burks' scale by their teacher than were females on six scales. These scales represented measures of a student's Coordination (Burks' 7), Academics (Burks' 9), Attention (Burks' 10), Impulse Control (Burks' 11), Aggressiveness (Burks' 17), and Resistance (Burks' 18). A significant race effect for eighth grade students was found for only one scale in contrast to the case for seventh grade where there were significant differences on five of the 19 Burks' scales. The significant eighth grade race effect was for Anxiety and resulted from the teachers rating the white students as significantly more anxious than the black students. The final significant Burks' scale effect was found for the race by sex interaction for the fourth Burks' scale. Black male students were rated to have less of a problem and white female students more of a problem with dependency.

The Wechsler Intelligence Scale for Children (WISC IQ) was administered to all study participants prior to the initiation of the Instrumental Enrichment program. An analysis of variance of

the WISC IQ scores classified by school and treatment condition for seventh grade students revealed a significant school effect, $F(9,160)=2.37$, $p<.05$, as well as a significant condition*school effect, $F(9,160)=2.26$, $p<.05$. At the eighth grade level, only the condition X school effect was significant, $F(9,125)=2.09$, $p<.05$. Parental Socio-Economic status measures were obtained and subjected to an analysis of variance to evaluate the condition and school effects at each grade level. Only the condition X school effect was found to be marginally significant for the fathers of the seventh grade students. Since some of these fathers were absent from the home and thus would not have a great effect on student learning, this result should not be considered as particularly meaningful.

The final determination of the effectiveness of the IE program will be based upon performance in academic achievement gain shown by students who had received the IE training as compared to student controls. The design of the evaluation study provided for the testing of the students with the Peabody Picture Vocabulary Test (PPVT) upon entrance into the program and upon graduation from the eighth grade. Thus, eighth grade students would have both pre and post PPVT scores while seventh grade students would only have the pre PPVT measure. Due to the fact that the seventh and eighth grade students represented two different waves in the study, program effect analysis procedures could only be used with the eighth grade data. Performance measures are summarized in the Appendix by level of condition and classification variables.

Since students were randomly assigned to IE treatment and control conditions, no significant differences would be expected on PPVT scores for students in the two different conditions. In contrast, there was an expectation that a significant difference in means among schools participating in the study and students classified by race would be found. Three separate analyses were performed on the PPVT pre scores at both grade levels. The first analysis of variance evaluated the effects of treatment condition and school in a crossed design. The school variable indicated significant differences among school PPVT means existed, 7th grade $F(9,161)=2.28$, $p<.05$ and 8th grade $F(8,122)=2.27$, $p<.05$. The other two analyses included the treatment condition and educational exceptionality factor with sex serving as the third factor in the first analysis of variance and race as the third factor in the second analysis of variance. Both of the these analyses of variance indicated that eduational exceptionality was a significant variable, $F(2,128)=5.95$ $p<.01$, with the EMH students scoring about 18 points below the EH and LD students. The race factor was also significant, $F(1, 128)=4.66$, $p<.05$, with the white students scoring 10 PPVT score points above the black students. Parallel analyses run on the seventh grade data showed only a significant educational exceptionality effect with EMH students scoring 18 points below the other two groups, $F(2,169)=7.43$, $p<.01$.

In view of the significant among school effects and the significant educational exceptionality and race effects, it was decided to use difference scores to evaluate the effectiveness of the first year of IE instruction on eighth grade students.

The same three basic analyses of variance were run on the PPVT difference scores for eighth grade students with the finding of no significant effects in any of the analyses. However, an analysis of the mean difference of 4.86 in pre and post PPVT scores for all eighth grade students participating in the IE evaluation program was found to be statistically significant, $t(129)=4.16$, $p<.01$. These results indicate that the eighth grade students whether in the IE treatment or control conditions gained on the average at about the same rate. Thus, these preliminary results do not provide support for the assumption underlying this research project, namely that students receiving the experiences provided by the Instrumental Enrichment program would perform better than students receiving instruction of the normal special education program. However, it must be recognized that the IE program has only been in operation for one year and that full year evaluation data was only available for eighth grade participants.

Grade point averages (GPA) were obtained for eighth grade students to provide another measure of impact of the IE program on special education students. Final grade point averages for the 1983-84 and 1984-85 academic years provided a basis for determining pre study comparability of student school achievement prior to the initiation of the IE program and after one year of program implementation. The same analyses were performed on the pre and post GPA measures as were performed on the PPVT test scores. None of the analyses indicated a basis for concluding the IE program treatment was related to an improved grade point

average for eighth grade students receiving IE training as compared to eighth grade control students following the normal special education program. The treatment group by school analysis on the pre and post GPA measures showed a significant school effect with differences in school mean GPA's. Subsequent analyses on the treatment group by exceptionality by race and by sex showed no significant differences on the pre GPA measures with an overall weighted value of 2.68 for all eighth grade students. The analysis of the post IE program GPA measures using the treatment group by exceptionality by race and by sex designs showed a significant exceptionality effect with EH GPA mean of 2.68 and EMH mean of 2.75 substantially below the LD mean of 3.00. This finding is rather surprising in view of the nonsignificant exceptionality effect observed for the pre GPA measures. The difference in pre and post weighted GPA measures indicated the study participants overall showed a statistically significant improvement of 0.20 in GPA units, $t(99)=3.02$, $p<.01$.

One final analysis was run using the PPVT difference score as the dependent variable in a multiple regression model with the Burk, WISC IQ score, Sex, Race, and Parental SES as imput variables while controlling for the different schools participating in the study. The regression analysis indicated that none of the study measures were significant predictors of PPVT difference scores and that the school blocking variable was the only significant variable in the model.

In summary, the analysis of data collected at the beginning of the first year of the IE project in the Wake County Public School System revealed significant differences between schools on

the performance measures of PPVT and WISC for both seventh and eighth grade students and on the grade point average measure for eighth grade students. The PPVT measure analysis also showed other significant classification variables such as Educational Exceptionality and Race with the poorest performance shown by the EMH and Black students, respectively. The end of the first year of program operation indicated a significant effect for eighth grade student Exceptionality GPA with the LD students earning higher GPA's in comparison to the other two categories of special eduation students. Also, there was a significant gain of 0.20 on the weighted GPA measure for eighth grade students participating in the study. In view of the significant relationships between the study design classification variables and PPVT pre study performance, it was decided to use the difference scores for the eighth grade students who were the only students to be tested at the end of the first year of program operation. The analysis of the PPVT difference scores showed no significant effects for any of the variables considered in the study although a test of the PPVT test score gain was significant. Thus, it was not possible to demonstrate that a significant effect resulted from the IE training. Additional analyses were performed on other variables collected prior to the initiation of the IE project. Included were the Burks' Behavior scale ratings provided by teachers, family SES measures, and the WISC IQ measure. Significant effects were found for several classification variables when analyses were performed on the teacher ratings obtained from the Burks' Scales which were, for the most part, explainable while

the only significant effects on the pre SES and IQ measures were related to the school or school X condition combinations. The pre measures were then used in a regression analysis to see if they could provide some help in explaining eighth grade student PPVT gains. The result of the regression analysis was disappointing when the only significant effect was found to be the classification variable of school attended.

APPENDIX A

Summary Statistics for Study Measures by Levels of Treatment Condition Within Grade Level

VARIABLE	N	MEAN	STANDARD DEVIATION
----------------	GRADE=7	GROUP=[illegible]	----------------
BURK1	71	7.00000000	[illegible]
BURK2	71	[illegible]	[illegible]
BURK3	71	[illegible]	[illegible]
BURK4	71	[illegible]	[illegible]
BURK5	71	[illegible]	[illegible]
BURK6	71	[illegible]	[illegible]
BURK7	71	6.67605634	[illegible]
BURK8	71	11.[illegible]	[illegible]
BURK9	71	11.57746479	[illegible]
BURK10	71	10.15492958	[illegible]
BURK11	71	9.09859155	[illegible]
BURK12	71	10.05633803	[illegible]
BURK13	71	[illegible]	[illegible]
BURK14	71	9.85915493	[illegible]
BURK15	71	8.57746479	[illegible]
BURK16	71	[illegible]	[illegible]
BURK17	71	10.14084507	[illegible]
BURK18	71	8.35211268	[illegible]
BURK19	71	12.53521127	[illegible]
PREPPVT	71	104.61971831	[illegible]
POSTPPVT	0	.	
PPVTDIFF	0	.	
WISCIQ	71	85.26760563	11.78007731
----------------	GRADE=7	GROUP=E	----------------
BURK1	110	7.01818182	3.07991963
BURK2	110	7.80000000	3.55765101
BURK3	110	9.11818182	3.71145467
BURK4	110	8.76363636	3.57854769
BURK5	110	13.40000000	[illegible].14416031
BURK6	110	6.70909091	3.50796347
BURK7	110	7.38181818	3.74272626
BURK8	110	12.30000000	4.90936196
BURK9	110	12.20909091	5.05700614
BURK10	110	9.70909091	4.70476131
BURK11	110	9.07272727	5.22469277
BURK12	110	10.49090909	[illegible].53084406
BURK13	110	6.39090909	[illegible].47221423
BURK14	110	10.32727273	4.[illegible]
BURK15	110	8.30000000	4.56403377
BURK16	110	7.67272727	4.21467313
BURK17	110	9.70000000	4.73359574
BURK18	110	7.89090909	4.12053585
BURK19	110	11.87272727	6.50350516
PREPPVT	110	106.56363636	14.78163684
POSTPPVT	0	.	
PPVTDIFF	0	.	
WISCIQ	109	84.59633028	12.32215655

VARIABLE	N	MEAN	STANDARD DEVIATION
---------------- GRADE=8		GROUP=C ----------------	
BURK1	53	6.98113208	[illegible]
BURK2	53	[illegible]	[illegible]
BURK3	53	6.03773582	[illegible]
BURK4	53	6.03773358	[illegible]
BURK5	53	13.09433962	[illegible]
BURK6	53	6.28301887	[illegible]
BURK7	53	6.58490566	[illegible]
BURK8	53	13.09433962	[illegible]
BURK9	53	13.09433962	[illegible]
BURK10	53	10.49056604	[illegible]
BURK11	53	8.33962264	[illegible]
BURK12	53	10.18867925	[illegible]
BURK13	53	7.79245283	[illegible]
BURK14	53	9.94339623	[illegible]
BURK15	53	7.94905660	[illegible]
BURK16	53	6.77358491	[illegible]
BURK17	53	8.45283019	[illegible]
BURK18	53	7.75471698	[illegible]
BURK19	53	11.41509434	[illegible]
PREPPVT	53	104.88679245	17.24010511
POSTPPVT	49	112.20408163	17.84771150
PPVTDIFF	48	6.12500000	14.83616197
WISCIQ	56	82.23214286	14.08931390
---------------- GRADE=8		GROUP=E ----------------	
BURK1	87	7.22988506	2.74370802
BURK2	87	7.13793103	5.75838010
BURK3	87	9.47126437	3.75356909
BURK4	87	8.63218391	3.94963515
BURK5	87	14.18390805	5.33300957
BURK6	87	6.64367816	5.53797672
BURK7	87	7.37931034	3.80465302
BURK8	87	13.41379310	5.37123333
BURK9	87	12.56321839	5.00395460
BURK10	87	10.41379310	4.84780392
BURK11	87	9.29885057	5.14016320
BURK12	87	10.97701149	3.24924882
BURK13	87	7.07448276	2.83847435
BURK14	87	10.54022989	4.11973299
BURK15	87	8.85057471	4.40277063
BURK16	87	7.58620690	3.38447799
BURK17	87	10.56321839	5.41681523
BURK18	87	8.78160920	4.97067046
BURK19	87	12.56321839	7.02934240
PREPPVT	87	103.16091954	18.56908757
POSTPPVT	82	108.17073171	19.61090959
PPVTDIFF	82	4.07317073	12.22503047
WISCIQ	87	79.06896552	13.96823065

APPENDIX B

Summary Statistics for Study Measures by Educational Exceptionality Category Within Grade Level

VARIABLE	N	MEAN	STANDARD DEVIATION
----------	GRADE=7	EXCEPT=EH	----------
BURK1	14	6.00000000	3.76215977
BURK2	14	7.64285714	3.92113599
BURK3	14	9.42857143	3.35959651
BURK4	14	7.78571429	3.98836810
BURK5	14	14.35714286	6.03033232
BURK6	14	6.07142857	3.86852065
BURK7	14	7.42857143	3.15531995
BURK8	14	12.78571429	4.83860392
BURK9	14	11.14285714	3.47280330
BURK10	14	12.07142857	3.81065713
BURK11	14	12.28571429	3.66698334
BURK12	14	12.00000000	3.08223206
BURK13	14	7.35714286	4.99560751
BURK14	14	12.07142857	5.59483671
BURK15	14	12.00000000	6.22649426
BURK16	14	9.35714286	5.47170544
BURK17	14	13.28571429	3.26860906
BURK18	14	11.42857143	3.98349378
BURK19	14	15.35714286	3.16754495
PREPPVT	14	106.35714286	15.09766738
POSTPPVT	0	.	
PPVTDIFF	0		
WISCIQ	13	85.30769231	9.73297330
-- ----------	GRADE=7	EXCEPT=EMH	----------
BURK1	24	6.70833333	2.78516865
BURK2	24	7.20833333	2.94343893
BURK3	24	9.25000000	4.16246165
BURK4	24	9.12500000	4.21500941
BURK5	24	13.70833333	6.65601504
BURK6	24	6.45833333	2.16652731
BURK7	24	7.12500000	3.33213823
BURK8	24	13.04166667	6.99265655
BURK9	24	13.41666667	5.80791564
BURK10	24	9.66666667	5.32100146
BURK11	24	7.75000000	4.40859311
BURK12	24	10.62500000	5.13205725
BURK13	24	6.29166667	1.94442719
BURK14	24	9.66666667	4.19799814
BURK15	24	8.04166667	4.82276456
BURK16	24	7.58333333	4.64305621
BURK17	24	9.45833333	5.31592494
BURK18	24	8.16666667	4.03965847
BURK19	24	11.04166667	5.01718063
PREPPVT	24	92.08333333	11.15860622
POSTPPVT	0	.	
PPVTDIFF	0		
WISCIQ	24	69.62500000	7.73929836
----------	GRADE=7	EXCEPT=LD	----------
BURK1	143	6.96503497	2.84929590
BURK2	143	7.35664336	3.04724473
BURK3	143	8.73426573	3.51445917
BURK4	143	8.21678322	3.04459776
BURK5	143	12.83916084	4.69889161
BURK6	143	6.34965035	2.24002874
BURK7	143	7.06993007	2.62343273
BURK8	143	11.62937063	4.24376647
BURK9	143	11.87412587	4.94172681
BURK10	143	9.70629371	4.70216038
BURK11	143	8.99300699	5.10108592
BURK12	143	10.10489510	2.76984081
BURK13	143	6.42657343	2.63639081
BURK14	143	10.03496503	4.00600357
BURK15	143	8.11888112	4.50584833
BURK16	143	7.67832168	4.06739249
BURK17	143	9.60839161	4.92340625
BURK18	143	7.72727273	3.97028012
BURK19	143	12.00000000	6.82683190
PREPPVT	143	108.04895105	16.00366537
POSTPPVT	0	.	
PPVTDIFF	0		
WISCIQ	143	87.37762238	10.98578095

VARIABLE	N	MEAN	STANDARD DEVIATION
------------- GRADE=8		EXCEPT=EH -------------	
BURK1	13	6. 15384615	1. 40511885
BURK2	13	6. 69230769	2. 13837604
BURK3	13	8. 84615385	4. 55154495
BURK4	13	8. 46153846	2. 06621170
BURK5	13	15. 69230769	5. 75245290
BURK6	13	5. 76923077	1. 15575055
BURK7	13	8. 23076923	2. 71274296
BURK8	13	12. 61538462	4. 92722255
BURK9	13	12. 53846154	4. 02351345
BURK10	13	12. 23076923	5. 15645988
BURK11	13	13. 61538462	7. 47817337
BURK12	13	11. 69230769	4. 09032630
BURK13	13	8. 00000000	4. 69041576
BURK14	13	13. 00000000	6. 33771778
BURK15	13	11. 07692308	6. 03409118
BURK16	13	7. 69230769	4. 26775049
BURK17	13	12. 23076923	5. 77192545
BURK18	13	12. 23076923	7. 47388616
BURK19	13	16. 53846154	10. 22753949
PREPPVT	13	111. 53846154	14. 77957704
POSTPPVT	13	120. 30769231	17. 64645675
PPVTDIFF	13	8. 76923077	9. 48818428
WISCIQ	14	88. 14285714	12. 45210605
------------- GRADE=8		EXCEPT=EMH -------------	
BURK1	45	7. 35555556	2. 71490462
BURK2	45	7. 06666667	2. 63197126
BURK3	45	9. 93333333	3. 83405790
BURK4	45	8. 46666667	3. 13049517
BURK5	45	13. 95555556	4. 88948573
BURK6	45	6. 97777778	2. 90007215
BURK7	45	7. 15555556	2. 90732269
BURK8	45	14. 80000000	5. 59870115
BURK9	45	13. 55555556	5. 47538108
BURK10	45	10. 42222222	4. 13130449
BURK11	45	8. 13333333	3. 74530009
BURK12	45	10. 55555556	2. 05685424
BURK13	45	6. 55555556	1. 99494310
BURK14	45	10. 35555556	3. 61282787
BURK15	45	8. 75555556	3. 88802484
BURK16	45	7. 48888889	2. 79302864
BURK17	45	9. 22222222	4. 27407028
BURK18	45	7. 82222222	3. 20006313
BURK19	45	11. 62222222	5. 13583174
PREPPVT	45	92. 11111111	16. 93466351
POSTPPVT	42	94. 61904762	15. 87289818
PPVTDIFF	42	1. 07142857	12. 15427829
WISCIQ	45	68. 73333333	13. 46780673
------------- GRADE=8		EXCEPT=LD -------------	
BURK1	82	7. 17073171	2. 65183318
BURK2	82	7. 10975610	2. 66206129
BURK3	82	8. 75609756	3. 08945229
BURK4	82	8. 08536585	2. 61619467
BURK5	82	13. 36585366	5. 22933840
BURK6	82	6. 36585366	2. 11702211
BURK7	82	6. 85365854	2. 52944122
BURK8	82	12. 57317073	5. 13047176
BURK9	82	12. 36585366	5. 56912112
BURK10	82	10. 17073171	5. 14914563
BURK11	82	8. 63414634	4. 45418986
BURK12	82	10. 58536585	3. 74402255
BURK13	82	6. 34146341	2. 18987294
BURK14	82	9. 86585366	3. 16134912
BURK15	82	7. 90243902	3. 72382969
BURK16	82	7. 09756098	3. 08964721
BURK17	82	9. 67073171	4. 76368692
BURK18	82	8. 09756098	4. 23276390
BURK19	82	11. 70731707	5. 90014433
PREPPVT	82	109. 01219512	16. 09884123
POSTPPVT	75	116. 08000000	15. 85471198
PPVTDIFF	75	6. 25333333	13. 99526303
WISCIQ	84	85. 20238095	10. 49472588

APPENDIX C

Summary Statistics for Study Measures

by Sex Category

Within Grade Level

VARIABLE	N	MEAN	STANDARD DEVIATION
---------------- GRADE=7		SEX=F ----------------	
BURK1	58	6.82758621	3.64997803
BURK2	58	7.44827586	3.44975165
BURK3	58	8.77586207	3.32492308
BURK4	58	7.84482759	3.00028011
BURK5	58	12.18965517	3.02784142
BURK6	58	6.12068966	2.08652810
BURK7	58	6.03448276	1.77534636
BURK8	58	11.75862069	3.03778824
BURK9	58	9.84482759	4.73322261
BURK10	58	8.51724138	4.41385727
BURK11	58	7.84482759	4.70184972
BURK12	58	10.06896552	3.11880262
BURK13	58	6.18965517	3.95549574
BURK14	58	9.72413793	4.36811856
BURK15	58	7.58896552	4.64451259
BURK16	58	6.65517241	3.24741043
BURK17	58	8.00000000	3.77561163
BURK18	58	7.22413793	4.12766633
BURK19	58	10.56896552	6.20161355
PREPPVT	58	101.46551724	16.69774175
POSTPPVT	0	.	
PPVTDIFF	0	.	
WISCIQ	58	81.79310345	10.86239065
---------------- GRADE=7		SEX=M ----------------	
BURK1	123	7.09756098	3.07665625
BURK2	123	7.31707317	3.15376278
BURK3	123	8.89430894	3.68606816
BURK4	123	8.52032520	3.47437833
BURK5	123	13.48780488	5.08995451
BURK6	123	6.44715447	2.29469542
BURK7	123	7.60975610	2.80115359
BURK8	123	11.97560976	4.60837337
BURK9	123	13.04878049	4.95860514
BURK10	123	10.52845528	5.03968905
BURK11	123	9.66666667	5.20193323
BURK12	123	10.43902439	2.81141217
BURK13	123	6.61788618	2.61621778
BURK14	123	10.34146341	4.09683858
BURK15	123	8.80487805	4.51231095
BURK16	123	8.33333333	4.58019018
BURK17	123	10.75609756	5.29512839
BURK18	123	8.47154472	4.26638635
BURK19	123	12.96991870	6.91869384
PREPPVT	123	107.84552846	15.66610234
POSTPPVT	0	.	
PPVTDIFF	0	.	
WISCIQ	122	86.31967213	12.39852457

BEST COPY AVAILABLE

VARIABLE	N	MEAN	STANDARD DEVIATION
GRADE=3 SEX=F			
BURK1	50	7.46000000	2.86577268
BURK2	50	7.34000000	1.91099254
BURK3	50	9.08000000	3.04166662
BURK4	50	8.18000000	2.98766170
BURK5	50	12.40000000	4.70345075
BURK6	50	6.98000000	2.66105702
BURK7	50	6.42000000	2.18613441
BURK8	50	12.86000000	4.19815507
BURK9	50	11.16000000	4.24411165
BURK10	50	8.52000000	3.44780320
BURK11	50	7.30000000	2.40037035
BURK12	50	10.06000000	3.43620649
BURK13	50	6.30000000	2.83225076
BURK14	50	10.30000000	3.82926403
BURK15	50	8.20000000	3.01857282
BURK16	50	6.82000000	2.40842205
BURK17	50	7.96000000	3.42833333
BURK18	50	7.20000000	3.20713490
BURK19	50	10.54000000	4.05679073
PREPPVT	50	99.16000000	15.24675944
POSTPPVT	44	102.38636364	17.57272716
PPVTDIFF	44	1.54545455	10.67153254
WISCIQ	51	75.94117647	13.06508594
GRADE=8 SEX=M			
BURK1	90	6.95555556	2.42139857
BURK2	90	6.90000000	2.40341517
BURK3	90	9.17777778	3.53021557
BURK4	90	8.27777778	2.60521421
BURK5	90	14.53333333	5.45502552
BURK6	90	6.24444444	2.06256691
BURK7	90	7.44444444	2.86831239
BURK8	90	13.53333333	5.30888592
BURK9	90	13.65555556	5.19758179
BURK10	90	11.51111111	5.18910796
BURK11	90	9.84444444	3.79343692
BURK12	90	11.02222222	3.11566458
BURK13	90	6.71111111	2.78133605
BURK14	90	10.32222222	3.75911709
BURK15	90	8.62222222	4.22027684
BURK16	90	7.53333333	3.42233247
BURK17	90	10.76666667	5.25324940
BURK18	90	9.05555556	4.93863719
BURK19	90	13.01111111	7.04479160
PREPPVT	90	106.40000000	19.05391522
POSTPPVT	86	113.24418605	18.79420189
PPVTDIFF	86	6.51162791	14.12694063
WISCIQ	92	82.72826087	11.05117190

APPENDIX D

Summary Statistics for Study Measures

by Race Category

Within Grade Level

VARIABLE	N	MEAN	STANDARD DEVIATION
------------------ GRADE=7 RACE=B ------------------			
BURK1	93	6.98924731	3.56013323
BURK2	93	6.91397849	3.75308489
BURK3	93	8.53913978	[illegible]91282
BURK4	93	8.21505376	3.84700248
BURK5	93	13.61290323	3.32841492
BURK6	93	6.07526882	1.90671901
BURK7	93	7.25806452	2.77372464
BURK8	93	12.06451613	[illegible]25397734
BURK9	93	12.78494624	5.41304676
BURK10	93	10.64516129	[illegible]48445463
BURK11	93	10.10752688	5.75866524
BURK12	93	10.49462366	[illegible]33335372
BURK13	93	6.50537634	[illegible]42999220
BURK14	93	10.25806452	4.52986041
BURK15	93	9.30107527	5.32995013
BURK16	93	8.17204301	4.35295914
BURK17	93	11.05376344	5.74336213
BURK18	93	8.93548387	4.34051392
BURK19	93	12.94623656	7.11300950
PREPPVT	93	101.10752688	15.17829965
POSTPPVT	0	.	.
PPVTDIFF	0	.	
WISCIQ	93	80.91397849	9.99853893

VARIABLE	N	MEAN	STANDARD DEVIATION
------------------ GRADE=7 RACE=W ------------------			
BURK1	87	6.96551724	3.26876791
BURK2	87	7.80459770	3.69738777
BURK3	87	9.13793103	3.91530216
BURK4	87	8.35632184	3.46402445
BURK5	87	12.52873563	4.81480054
BURK6	87	6.64367816	2.51496457
BURK7	87	6.96551724	2.46580463
BURK8	87	11.78160920	4.14960151
BURK9	87	11.27586207	4.62724403
BURK10	87	9.10344828	4.24273519
BURK11	87	8.03448276	4.23289520
BURK12	87	10.11494253	2.66512920
BURK13	87	6.44827586	3.85607724
BURK14	87	10.02298851	3.82761390
BURK15	87	7.42528736	3.94624397
BURK16	87	7.37931034	4.17423264
BURK17	87	8.65517241	3.92021471
BURK18	87	7.14942529	3.33246447
BURK19	87	11.29885057	6.33762283
PREPPVT	87	111.56321839	14.08091331
POSTPPVT	0	.	.
PPVTDIFF	0	.	
WISCIQ	86	89.16279070	12.78129190

VARIABLE	N	MEAN	STANDARD DEVIATION
---------- GRADE=3	RACE=B	----------	
BURK1	92	7.09782607	2.41360513
BURK2	92	6.67391304	2.15400825
BURK3	92	9.03260870	3.40475132
BURK4	92	7.92391304	3.34981269
BURK5	92	13.52173913	5.06979476
BURK6	92	6.25000000	2.04684158
BURK7	92	6.90217391	2.43174872
BURK8	92	13.36956522	5.45252717
BURK9	92	13.01086957	5.47420437
BURK10	92	10.38043478	4.63821297
BURK11	92	9.19565217	4.63491849
BURK12	92	10.48913043	2.86891091
BURK13	92	6.43478261	2.06117617
BURK14	92	10.04347826	3.37056764
BURK15	92	8.82608696	4.08322404
BURK16	92	7.30434783	3.10879338
BURK17	92	9.96739130	4.80716289
BURK18	92	8.57608696	4.25617508
BURK19	92	12.35869565	6.26271282
PREPPVT	92	100.29347826	15.61032206
POSTPPVT	85	105.52941176	17.03608791
PPVTDIFF	85	4.62352941	13.08941454
WISCIQ	93	76.90322581	12.61043781
---------- GRADE=3	RACE=W	----------	
BURK1	48	7.20833333	2.92428084
BURK2	48	7.79166667	3.17542648
BURK3	48	9.35416667	3.72735479
BURK4	48	8.85416667	3.30048084
BURK5	48	14.25000000	5.69247357
BURK6	48	7.00000000	2.70539257
BURK7	48	7.41666667	3.10684442
BURK8	48	13.14583333	4.92492395
BURK9	48	12.29166667	4.94203995
BURK10	48	10.56250000	5.27501639
BURK11	48	8.43750000	5.16084378
BURK12	48	11.04166667	3.01032502
BURK13	48	6.81250000	3.15322361
BURK14	48	10.83333333	4.43071164
BURK15	48	7.79166667	4.08920912
BURK16	48	7.22916667	3.13687460
BURK17	48	9.37500000	4.99201490
BURK18	48	8.04166667	4.89879852
BURK19	48	11.68750000	6.25063827
PREPPVT	48	110.56250000	20.56945292
POSTPPVT	45	117.20000000	20.42013267
PPVTDIFF	45	5.22222222	13.63132904
WISCIQ	50	86.64000000	14.51636656

APPENDIX E

Summary Statistics for Study Measures by School Within Grade Level

VARIABLE	N	MEAN	STANDARD DEVIATION
---------- GRADE=7	SCHID=356	----------	
BURK1	24	6.29166667	1.50528612
BURK2	24	7.16666667	2.42570773
BURK3	24	8.45833333	2.96324098
BURK4	24	7.70833333	2.33566286
BURK5	24	12.25000000	3.98093282
BURK6	24	6.00000000	2.56504631
BURK7	24	7.00000000	2.99564823
BURK8	24	12.45833333	3.47636950
BURK9	24	13.08333333	4.44205854
BURK10	24	9.66666667	3.96360252
BURK11	24	9.04166667	3.16239869
BURK12	24	11.29166667	3.50749715
BURK13	24	6.50000000	3.10679480
BURK14	24	9.79166667	4.82727006
BURK15	24	8.66666667	3.51414518
BURK16	24	6.58333333	2.68517130
BURK17	24	8.50000000	4.03247685
BURK18	24	8.20833333	4.37164589
BURK19	24	12.25000000	7.51375550
PREPPVT	24	97.62500000	20.09934565
POSTPPVT	0	.	.
PPVTDIFF	0	.	.
WISCIQ	24	79.66666667	12.00241522
---------- GRADE=7	SCHID=360	----------	
BURK1	16	5.12500000	0.50000000
BURK2	16	5.37500000	0.71879529
BURK3	16	6.43750000	0.62915287
BURK4	16	6.25000000	0.57735027
BURK5	16	9.56250000	2.65753645
BURK6	16	5.00000000	0.00000000
BURK7	16	5.81250000	0.83416625
BURK8	16	7.87500000	1.08781126
BURK9	16	8.43750000	2.52899848
BURK10	16	7.93750000	3.23457880
BURK11	16	6.18750000	1.51520076
BURK12	16	8.37500000	0.80622577
BURK13	16	5.12500000	0.34156503
BURK14	16	7.75000000	1.00000000
BURK15	16	5.68750000	1.01447852
BURK16	16	5.93750000	1.52616076
BURK17	16	7.75000000	1.77012241
BURK18	16	6.00000000	1.21106014
BURK19	16	9.62500000	2.15638587
PREPPVT	16	114.18750000	15.22374790
POSTPPVT	0	.	.
PPVTDIFF	0	.	.
WISCIQ	16	93.25000000	14.24312700

VARIABLE	N	MEAN	STANDARD DEVIATION
---------- GRADE=7		SCHID=388	----------
BURK1	21	7.52380952	3.07602093
BURK2	21	7.09523810	3.40447684
BURK3	21	9.28571429	3.77018378
BURK4	21	10.47619048	5.87042628
BURK5	21	13.42857143	5.44583720
BURK6	21	7.33333333	2.55603860
BURK7	21	6.38095238	2.26883650
BURK8	21	12.85714286	6.00238048
BURK9	21	12.14285714	5.98569724
BURK10	21	12.42857143	5.80147764
BURK11	21	9.19047619	4.21448749
BURK12	21	10.95238095	3.45653281
BURK13	21	6.95238095	2.01186954
BURK14	21	11.42857143	5.74083120
BURK15	21	8.61904762	4.27172319
BURK16	21	9.90476190	5.22402873
BURK17	21	10.66666667	5.01110084
BURK18	21	9.47619048	4.68635303
BURK19	21	14.42857143	7.48045071
PREPPVT	21	102.47619048	23.28007527
POSTPPVT	0	.	.
PPVTDIFF	0	.	.
WISCIQ	21	83.42857143	12.28239158
---------- GRADE=7		SCHID=404	----------
BURK1	29	7.03448276	4.25510415
BURK2	29	7.06896552	3.76953042
BURK3	29	9.00000000	4.90626422
BURK4	29	7.24137931	2.09855685
BURK5	29	11.03448276	5.21318903
BURK6	29	5.72413793	1.53289063
BURK7	29	7.20689655	2.96863738
BURK8	29	9.58620690	3.82209032
BURK9	29	9.82758621	5.00762965
BURK10	29	7.72413793	4.78760715
BURK11	29	8.27586207	5.07019689
BURK12	29	10.06896552	2.95116242
BURK13	29	7.10344828	4.26233360
BURK14	29	9.89655172	4.78348967
BURK15	29	9.51724138	5.99774178
BURK16	29	7.68965517	5.46484510
BURK17	29	9.96551724	6.01476017
BURK18	29	8.03448276	4.66355749
BURK19	29	13.27586207	8.85153962
PREPPVT	29	105.31034483	12.24191701
POSTPPVT	0	.	.
PPVTDIFF	0	.	.
WISCIQ	29	85.24137931	11.98706199

VARIABLE	N	MEAN	STANDARD DEVIATION
---------- GRADE=7		SCHID=408	----------
BURK1	14	8.64285714	2.13423172
BURK2	14	10.21428571	3.96481780
BURK3	14	10.07142857	3.62606559
BURK4	14	10.64285714	2.06089640
BURK5	14	15.78571429	4.40591510
BURK6	14	8.07142857	3.40732868
BURK7	14	8.21428571	2.29308564
BURK8	14	13.28571429	3.85164443
BURK9	14	14.50000000	3.39116499
BURK10	14	12.78571429	4.83860392
BURK11	14	12.21428571	7.13796536
BURK12	14	10.78571429	1.36880472
BURK13	14	7.14285714	1.35062053
BURK14	14	11.85714286	3.23103086
BURK15	14	12.21428571	4.44069552
BURK16	14	11.78571429	3.53397948
BURK17	14	14.50000000	6.03515343
BURK18	14	10.64285714	5.10817057
BURK19	14	15.50000000	9.23829821
PREPPVT	14	109.35714286	10.54373414
POSTPPVT	0	.	.
PPVTDIFF	0	.	.
WISCIQ	14	83.71428571	9.38434516
---------- GRADE=7		SCHID=424	----------
BURK1	18	5.11111111	0.32338083
BURK2	18	5.55555556	2.35702260
BURK3	18	6.83333333	2.59524452
BURK4	18	6.72222222	1.48742001
BURK5	18	10.83333333	3.29438024
BURK6	18	5.44444444	1.19912822
BURK7	18	5.83333333	1.46528455
BURK8	18	10.22222222	3.82800141
BURK9	18	10.44444444	5.49033613
BURK10	18	7.22222222	2.86059549
BURK11	18	5.72222222	1.56451667
BURK12	18	8.38888889	0.77754432
BURK13	18	5.22222222	0.94280904
BURK14	18	7.38888889	0.97852764
BURK15	18	5.11111111	0.47140452
BURK16	18	5.00000000	0.00000000
BURK17	18	6.77777778	2.36532683
BURK18	18	5.33333333	0.76696499
BURK19	18	8.72222222	1.60865747
PREPPVT	18	106.05555556	11.92364049
POSTPPVT	0	.	.
PPVTDIFF	0	.	.
WISCIQ	18	82.16666667	12.05502092

VARIABLE	N	MEAN	STANDARD DEVIATION
GRADE=7 SCHID=472			
BURK1	21	8. 047619	[illegible]
BURK2	21	6. 761904	[illegible]
BURK3	21	10. 476190	[illegible]
BURK4	21	7. 523809	[illegible]
BURK5	21	15. 571428	[illegible]
BURK6	21	7. 523809	[illegible]
BURK7	21	7. 857142	[illegible]
BURK8	21	14. 000000	[illegible]
BURK9	21	14. 476190	[illegible]
BURK10	21	12. 857142	[illegible]
BURK11	21	12. 809523	[illegible]
BURK12	21	11. 142857	[illegible]
BURK13	21	7. 095238	[illegible]
BURK14	21	11. 333333	[illegible]
BURK15	21	9. 095238	[illegible]
BURK16	21	8. 000000	[illegible]
BURK17	21	11. 666666	[illegible]
BURK18	21	8. 571428	[illegible]
BURK19	21	12. 190476	[illegible]
PREPPVT	21	109. 000000	[illegible]
POSTPPVT	0	.	
PPVTDIFF	0	.	
WISCIQ	20	87. 750000	[illegible]
GRADE=7 SCHID=592			
BURK1	16	6. 750000	1. 570562
BURK2	16	8. 062500	2. 351418
BURK3	16	9. 562500	4. 516174
BURK4	16	8. 562500	2. 308498
BURK5	16	14. 500000	2. 949920
BURK6	16	6. 375000	1. 821171
BURK7	16	8. 062500	3. 549060
BURK8	16	14. 562500	3. 999479
BURK9	16	13. 750000	5. 360348
BURK10	16	8. 250000	3. 355764
BURK11	16	8. 187500	3. 525502
BURK12	16	9. 687500	0. 873212
BURK13	16	5. 562500	0. 727438
BURK14	16	9. 750000	1. 620432
BURK15	16	7. 312500	3. 944933
BURK16	16	6. 062500	0. 315877
BURK17	16	9. 250000	3. 685751
BURK18	16	7. 125000	0. 855183
BURK19	16	10. 750000	1. 833666
PREPPVT	16	105. 750000	12. 363926
POSTPPVT	0	.	
PPVTDIFF	0	.	
WISCIQ	16	84. 500000	8. 988882

VARIABLE	N	MEAN	STANDARD DEVIATION
---------- GRADE=7	SCHID=608	----------	
BURK1	11	9. 18181818	5 [illegible]
BURK2	11	9. 09090909	7 [illegible]
BURK3	11	8. 27272727	7 [illegible]
BURK4	11	11 81818182	[illegible]
BURK5	11	17. 54545455	[illegible]
BURK6	11	6. 72727273	1 [illegible]
BURK7	11	8. 45454545	1 [illegible]
BURK8	11	13. 00000000	[illegible]
BURK9	11	11 63636364	[illegible]
BURK10	11	11. 27272727	[illegible]
BURK11	11	11. 81818182	[illegible]
BURK12	11	13. 36363636	[illegible]
BURK13	11	6. 54545455	[illegible]
BURK14	11	13. 45454545	[illegible]
BURK15	11	9. 54545455	[illegible]
BURK16	11	10 27272727	[illegible]
BURK17	11	11 36363636	[illegible]
BURK18	11	9. 18181818	[illegible]
BURK19	11	12 63636364	[illegible]
PREPPVT	11	116 18181818	[illegible]
POSTPPVT	0	.	
PPVTDIFF	0	.	
WISCIQ	11	89 27272727	8 67284162
---------- GRADE=7	SCHID=612	----------	
BURK1	11	7. 54545455	3 1420896[illegible]
BURK2	11	5. 81818182	1. 2504544[illegible]
BURK3	11	10. 27272727	3. 1651511[illegible]
BURK4	11	8. 45454545	1 5724907[illegible]
BURK5	11	13. 54545455	5 4472678[illegible]
BURK6	11	5. 36363636	0 [illegible]
BURK7	11	6. 81818182	1. 2504544[illegible]
BURK8	11	12. 90909091	5. 1079261[illegible]
BURK9	11	13. 09090909	4. 7213249[illegible]
BURK10	11	10. 00000000	4. 6043457[illegible]
BURK11	11	8. 27272727	4 5136482[illegible]
BURK12	11	10. 81818182	3. 3587361[illegible]
BURK13	11	7. 18181818	2 3587361[illegible]
BURK14	11	9. 90909091	5. 5021684[illegible]
BURK15	11	8. 18181818	4 0451991[illegible]
BURK16	11	8. 54545455	4 3900714[illegible]
BURK17	11	9. 36363636	4. 4333447[illegible]
BURK18	11	8. 72727273	3. 7172815[illegible]
BURK19	11	10. 81818182	5. 9954519[illegible]
PREPPVT	11	97. 72727273	14 2974886[illegible]
POSTPPVT	0	.	
PPVTDIFF	0	.	
WISCIQ	11	82. 45454545	8. 2506198[illegible]

VARIABLE	N	MEAN	STANDARD DEVIATION
------- GRADE=8		SCHID=356 -------	
BURK1	23	7.52173913	[illegible]
BURK2	23	8.00000000	[illegible]
BURK3	23	9.69565217	[illegible]
BURK4	23	8.34782609	[illegible]
BURK5	23	14.52173913	[illegible]
BURK6	23	6.21739130	[illegible]
BURK7	23	6.91304348	1.95199300
BURK8	23	14.08695652	4.57014739
BURK9	23	15.13043478	[illegible]
BURK10	23	10.56521739	[illegible]
BURK11	23	10.04347826	[illegible]
BURK12	23	12.08695652	3.08829231
BURK13	23	6.91304348	[illegible]
BURK14	23	11.82608696	[illegible]
BURK15	23	9.52173913	[illegible]
BURK16	23	6.60869565	4.29107221
BURK17	23	9.08695652	4.15509592
BURK18	23	8.91304348	4.55105175
BURK19	23	12.43478261	3.74082600
PREPPVT	23	111.08695652	19.08810444
POSTPPVT	23	118.21739130	16.43985324
PPVTDIFF	22	5.45454545	12.84236765
WISCIQ	23	82.26086957	13.53519786
------- GRADE=8		SCHID=360 -------	
BURK1	16	5.18750000	0.40311287
BURK2	16	5.06250000	0.99791449
BURK3	16	6.37500000	0.81913919
BURK4	16	6.50000000	0.89442719
BURK5	16	7.93750000	1.34008706
BURK6	16	5.12500000	0.34156503
BURK7	16	5.56250000	0.89209491
BURK8	16	7.62500000	0.80622577
BURK9	16	7.37500000	1.82117178
BURK10	16	6.43750000	1.54784797
BURK11	16	5.62500000	1.14746097
BURK12	16	8.18750000	0.98107084
BURK13	16	5.18750000	0.75000000
BURK14	16	7.81250000	1.47054412
BURK15	16	6.06250000	1.56923548
BURK16	16	5.18750000	0.40311289
BURK17	16	6.56250000	1.09354165
BURK18	16	5.81250000	1.10867789
BURK19	16	8.68750000	1.25246685
PREPPVT	16	109.12500000	18.33348485
POSTPPVT	16	114.00000000	18.85382366
PPVTDIFF	16	4.87500000	10.22985825
WISCIQ	16	84.75000000	13.58185043

VARIABLE	N	MEAN	STANDARD DEVIATION
----------------- GRADE=8		SCHID=388 -----------------	
BURK1	12	9.00000000	[illegible]
BURK2	12	7.41666667	[illegible]
BURK3	12	10.08333333	[illegible]
BURK4	12	10.00000000	[illegible]
BURK5	12	13.58333333	[illegible]
BURK6	12	6.91666667	[illegible]
BURK7	12	6.25000000	[illegible]
BURK8	12	12.83333333	[illegible]
BURK9	12	9.41666667	[illegible]
BURK10	12	11.91666667	[illegible]
BURK11	12	9.41666667	[illegible]
BURK12	12	10.50000000	[illegible]
BURK13	12	7.75000000	[illegible]
BURK14	12	12.08333333	[illegible]
BURK15	12	9.75000000	[illegible]
BURK16	12	10.91666667	[illegible]
BURK17	12	11.50000000	[illegible]
BURK18	12	10.08333333	[illegible]
BURK19	12	14.08333333	[illegible]
PREPPVT	12	96.33333333	17.26443192
POSTPPVT	10	98.60000000	20.00111109
PPVTDIFF	10	2.80000000	15.53842289
WISCIQ	12	73.00000000	14.67836979

VARIABLE	N	MEAN	STANDARD DEVIATION
----------------- GRADE=8		SCHID=408 -----------------	
BURK1	18	8.61111111	2.61531433
BURK2	18	7.66666667	2.40098019
BURK3	18	8.22222222	2.12977645
BURK4	18	10.00000000	2.55957185
BURK5	18	14.00000000	4.13023287
BURK6	18	7.55555556	2.30656919
BURK7	18	7.55555556	2.22874889
BURK8	18	15.00000000	5.09901951
BURK9	18	13.55555556	4.51431999
BURK10	18	11.33333333	4.74031520
BURK11	18	9.11111111	4.35414286
BURK12	18	11.27777778	2.63026627
BURK13	18	6.38888889	2.14582738
BURK14	18	9.94444444	2.50815663
BURK15	18	8.55555556	3.45086898
BURK16	18	7.83333333	2.30727749
BURK17	18	10.11111111	4.76369714
BURK18	18	7.38888889	3.34556579
BURK19	18	11.27777778	5.00359348
PREPPVT	18	[illegible].77777778	16.40859013
POSTPPVT	14	[illegible]92857143	13.65770724
PPVTDIFF	14	[illegible]92857143	19.27319496
WISCIQ	20	80.20000000	12.97609137

VARIABLE	N	MEAN	STANDARD DEVIATION
		GRADE=8 SCHID=424	
BURK1	16	5.25000000	0.57735027
BURK2	16	6.06250000	3.08066496
BURK3	16	7.87500000	4.04763305
BURK4	16	7.12500000	1.[illegible]58513
BURK5	16	13.75000000	4.[illegible]168760
BURK6	16	5.37500000	2.36290781
BURK7	16	6.50000000	2.12916259
BURK8	16	12.68750000	4.15882596
BURK9	16	12.25000000	5.07179271
BURK10	16	10.25000000	4.50724975
BURK11	16	7.25000000	5.88217647
BURK12	16	10.31250000	2.57471681
BURK13	16	5.81250000	1.37689264
BURK14	16	8.06250000	1.87860764
BURK15	16	5.50000000	1.75119007
BURK16	16	5.43750000	1.03077641
BURK17	16	7.68750000	3.04890691
BURK18	16	6.75000000	4.75394573
BURK19	16	10.75000000	6.43428318
PREPPVT	16	100.87500000	13.66696992
POSTPPVT	16	103.12500000	15.69660260
PPVTDIFF	16	2.25000000	8.80530143
WISCIQ	17	79.58823529	14.04038293
		GRADE=8 SCHID=472	
BURK1	15	7.73333333	2.46306043
BURK2	15	8.13333333	2.87518115
BURK3	15	10.13333333	3.58302878
BURK4	15	7.20000000	2.07708587
BURK5	15	15.40000000	5.38251136
BURK6	15	7.73333333	2.81492620
BURK7	15	8.13333333	3.27035749
BURK8	15	13.00000000	4.29285120
BURK9	15	14.73333333	4.63629573
BURK10	15	11.33333333	5.34076863
BURK11	15	9.73333333	4.00832467
BURK12	15	9.93333333	1.70991506
BURK13	15	6.13333333	1.72654348
BURK14	15	11.53333333	3.50238014
BURK15	15	10.06666667	4.07898213
BURK16	15	7.33333333	2.09307247
BURK17	15	11.33333333	4.45078912
BURK18	15	9.20000000	3.50917166
BURK19	15	12.00000000	3.56570971
PREPPVT	15	107.86666667	12.96625657
POSTPPVT	15	105.00000000	14.69693846
PPVTDIFF	15	-2.86666667	10.39825993
WISCIQ	15	75.60000000	11.01168211

VARIABLE	N	MEAN	STANDARD DEVIATION
GRADE=8	SCHID=592		
BURK1	17	7. [illegible]	[illegible]
BURK2	17	[illegible]	[illegible]
BURK3	17	[illegible]	[illegible]
BURK4	17	[illegible]	[illegible]
BURK5	17	[illegible]	[illegible]
BURK6	17	[illegible]	[illegible]
BURK7	17	[illegible]	[illegible]
BURK8	17	[illegible]	[illegible]
BURK9	17	[illegible]	[illegible]
BURK10	17	[illegible]	[illegible]
BURK11	17	10. 29411765	[illegible]
BURK12	17	10. 17647059	[illegible]
BURK13	17	6. 41176471	[illegible]
BURK14	17	9. 76470588	[illegible]
BURK15	17	8. 82352941	[illegible]
BURK16	17	7. 47058824	[illegible]
BURK17	17	9. 76470588	[illegible]
BURK18	17	8. 82352941	[illegible]
BURK19	17	12. 41176471	[illegible]
PREPPVT	17	98. 70588235	[illegible]
POSTPPVT	15	110. 20000000	[illegible]
PPVTDIFF	15	10. 66666667	[illegible]
WISCIQ	17	80. 88235294	[illegible]
GRADE=8	SCHID=608		
BURK1	11	6. 81818182	[illegible]
BURK2	11	7. 72727273	[illegible]
BURK3	11	12. 27272727	[illegible]
BURK4	11	10. 27272727	[illegible]
BURK5	11	16. 90909091	[illegible]
BURK6	11	6. 72727273	[illegible]
BURK7	11	8. 63636364	[illegible]
BURK8	11	16. 63636364	[illegible]
BURK9	11	13. 63636364	[illegible]
BURK10	11	12. 72727273	[illegible]
BURK11	11	10. 72727273	[illegible]
BURK12	11	12. 72727273	[illegible]
BURK13	11	7. 81818182	[illegible]
BURK14	11	13. 72727273	[illegible]
BURK15	11	10. 63636364	[illegible]
BURK16	11	9. 63636364	[illegible]
BURK17	11	14. 27272727	[illegible]
BURK18	11	12. 36363636	[illegible]
BURK19	11	17. 54545455	[illegible]
PREPPVT	11	115. 63636364	[illegible]
POSTPPVT	11	123. 90909091	[illegible]
PPVTDIFF	11	8. 27272727	[illegible]
WISCIQ	11	91. 63636364	[illegible]

EVALUATION

SUMMARY AND EVALUATION OF SECOND YEAR ACTIVITIES

1985-86

An Assessment of the Implementation of the Instrumental Enrichment Program in Selected Wake County Middle Schools

John L. Wasik

An evaluation of the effectiveness of an intervention program must make the assumption that the program was being implemented as designed by the program developers. This situation is of major concern when the evaluation of the program has not found an positive effect due to the program. Without formal evidence of appropriate implementation of an intervention program, it will not be possible to state conclusively if the measured results of the program reflect failure of the program to produce the desired effect or a failure to implement the program correctly.

The Wake County Public School System (WCPSS) implementation of the Instrumental Enrichment (IE) Program for middle school students with learning and/or emotional handicaps included periodic observation of teachers involved in teaching the program. A Lesson Observation Form was developed by WCPSS personnel for the purpose of assessing the extent to which teachers were implementing the IE program instructional strategies during the IE classes.

While the observational data collected during classroom visits was used by WCPSS personnel for program monitoring purposes, it was concluded that a statistical analysis of the data would also represent an opportunity to demonstrate the extent to which the program was being implemented in the classroom as designed.

PROCEDURE

The monitoring plan established by the Director of the WCPSS Instrumental Enrichment Project called for periodic visits by a member of the Project Staff trained in IE teaching strategies to classes where the IE Instruction was being provided. The staff member utilized the Instrumental Enrichment Lesson Observation Form to record the extent to which the observed lesson followed IE instructional principles. A copy of the Lesson Observation Form can be obtained from Ms. Hermina Hunter of WCPSS.

A total of 12 classroom observations were made in the classrooms of 11 different teachers during October of 1984 at which time the program was getting under way and represented the only observations available for the first year of program operation. The remaining 41 classroom observations were made in the classrooms of eight different teachers during the second year of IE program operation starting in September of 1986 and ending in March of 1986.

The statistical analyses performed on the data included comparisons of mean number of students and time spent in teaching IE lesson components for the time periods of October, 1984; fall, 1985; and spring, 1986. In addition, frequency counts and percentages of IE instructional lesson characteristics found on the Instrumental Enrichment Lesson Observation Form were tabulated for the 1984-85 (actually October of 1985) and 1985-86 academic years.

RESULTS

Table 1 gives a summary of mean number of students taught per lesson for the three time periods of interest.

Table 1

Summary Statistics for Numbers of Students per Observation Period

Year 1984			1985			1986		
Mean	St. Dev.	N	Mean	St. Dev.	N	Mean	St. Dev.	N
11.1	3.67	11	8.4	3.98	14	9.75	3.34	24

An inspection of mean class size revealed a slight amount of variation around the overall mean class size of 9.67 students (st. dev.=3.68). Moreover, an analysis of variance performed on the means of the three groups revealed no significant differences, $F(2,46)=1.67$, $p=.20$. (Some of the observations found within an observation year were of the same teachers. However, it was assumed that the number of students attending class would represent a random process beyond the control of the teacher and that these repeated observations of the same teacher could be assumed to represent random replicates.)

The summary statistics of minutes spent in each of the four IE lesson components is presented in Table 2.

Table 2

Summary Statistics of Time Allocations of

IE Lesson Components in Minutes

	Year 1984			1985			1986		
Comp.	Mean	St. Dev.	N	Mean	St. Dev.	N	Mean	St. Dev.	N
1	11.7	3.26	12	10.0	2.77	14	11.5	3.67	24
2	20.0	2.67	8	16.7	8.62	12	16.0	6.26	22
3	14.5	7.24	10	15.7	6.46	14	14.0	8.18	24
4	5.9	2.18	10	4.3	1.61	12	3.7	1.28	22

As can be noted from an inspection of Table 2, the ranking of mean time per IE Lesson component was remarkably consistent over the three observation periods. Students in IE classes typically spent more time in independent work and somewhat less time participating in class discussion. The next greatest amount of class time was utilized by the teacher in introducing the lesson at the beginning of the class while the least amount of time, typically about five minutes, was spent in summarizing the lesson at the end of class.

Analyses of variance were performed on the time reports between years for each of the lesson components. The results are presented below in Table 3.

Table 3

Summary of ANOVA of Time Spent on Lesson Components Between Years Within Component

Lesson Component	ANOVA SUMMARY Source	df	MS	F
INTRODUCTION	Years	2	12.70	1.13
	Error	47	11.20	
INDEP. STUDY	Years	2	46.68	1.08
	Error	39	43.32	
DISCUSSION	Year	2	12.47	0.22
	Error	45	56.81	
SUMMARY	Year	2	16.25	6.29*
	Error	41	2.58	

* $p < .05$.

Only the between year component of an IE Lesson showed a significant difference between years and seemed to reflect a tendency for teachers to spend less time on summaries over the three observation periods.

The percentage of responses to the item options providing a description of an IE lesson were summarized within academic school year by item and are presented in Table 4. Percentages were used for analysis purposes since there were varying numbers of omitted responses on several of the items.

Table 4

Percentage of Lesson Characteristics Observed in IE Classrooms by Academic School Year

Item	Total Missing	Year 1984-85 (N=12) Yes	No	1985-86 (N=43) Yes	No
I. INTRODUCTION					
1. Comp. to other Work	9	100	0	94	6
2. Voc./Concept Form					
a) introduced	6	100	0	94	6
b) well-defined	6	100	0	94	6
c) student defined	7	100	0	94	6
d) examples given	6	100	0	94	6
e) student examples	7	100	0	94	6
f) related to page	11	100	0	94	6
3. Definition of Problem					
a) read./exp. by tchr.	5	89	11	95	5
b) students contribute	4	100	0	95	5
c) focus on Prob.	9	100	0	91	9
4. Anticipation of Diff.					
a) by teacher only	13	50	50	97	3
b) by students	15	100	0	68	32
5. Strategies Developed					
a) by teacher only	10	71	29	100	0
b) by student	11	100	0	100	0
c) various strategies	9	100	0	100	0
d) why they work	40	100	0	83	17
f) self checking	23	100	0	100	0
6. Principles					
a) introduced	8	100	0	100	0
b) examples given	7	100	0	100	0
7. Question					
a) does tchr. vary	3	100	0	100	0
b) tchr. use probes	4	100	0	100	0
8. Mini Summary Used	6	100	0	100	0

Table 4 Continued

Item	Total Missing	Year 1984-85 (N=12) Yes	1984-85 (N=12) No	1985-86 (N=43) Yes	1985-86 (N=43) No
II. IDEPENDENT WORK PERIOD					
1. Student Att'n. Focused	15				
a) few		0		0	
b) most		0		42	
c) all		100		58	
2. Student Work Checked					
a) by teacher	15	100	0	100	0
b) by students	45	100	0	83	33
3. Students Helped.					
a) by teacher	14	100	0	100	0
b) by students	47	100	0	80	20
4. Strategies and Cues Dev.					
a) by teacher	13	100	0	100	0
b) by students	23	100	0	100	0
5. Insight Developed					
a) by teacher	15	100	0	100	0
b) by students	25	100	0	100	0
6. Activit. for Finishers	41	100	0	100	0
III. Discussion					
1. Discuss how prob. solv.					
a) by teacher	7	50	50	100	0
b) by students	5	100	0	100	0
c) diff. discussion	6	100	0	100	0
d) process discussion	6	100	0	100	0
e) var. proc. accepted	5	100	0	100	0
f) correct answer anal.	5	100	0	100	0
g) errors analyzed					
h) alt. sol. intro.	11	100	0	100	0
2. Connection to Main Prin.					
a) present	10	100	0	100	0
3. Bridges Used					
a) by teachers	12	100	0	100	0
b) by students	16	100	0	100	0
c) approp. to prin.	12	100	0	100	0
d) across 2+ areas	17	100	0	100	0
4. Questions					
a) tchr Vary Across 2+	7	100	0	100	0
b) tchr use problems	13	100	0	100	0

Table 4 Continued

Item	Total Missing	Year 1984-85 (N=12) Yes	No	1985-86 (N=43) Yes	No
IV. SUMMARY					
1. Summary Present	11	100	0	100	0
2. Student Contribute	14	100	0	100	0
3. Connect Principle					
a) to page	18	100	0	100	0
b) to bridging	25	100	0	100	0
4. Mention Process	18	100	0	96	4
V. GENERAL CHARACTERISTICS					
1. Praises	9				
a) seldom		0		0	
b) sometimes		0		39	
c) often		100		61	
2. Accepts	12				
a) seldom		0		0	
b) sometimes		0		33	
c) often		100		67	
3. Rejects	16				
a) seldom		100		88	
b) sometimes		0		12	
c) often		0		0	
4. Pacing Appropriate	8	100	0	97	3
5. Blackboard Used Effect.	7	100	0	94	6
6. General Atmosphere Pleas.	5	100	0	97	3
7. Interaction Constructive	32	100	0	92	8

An inspection of percent yes responses to the various items on the Instrumental Enrichment Lesson Observation Form suggests that the teachers were conscientious in following the Instrumental Enrichment curriculum guide in presenting the course content to middle school grade students with exceptional educational needs. These results further indicate that trained observers were able to identify the various elements of the instrumental enrichment lesson and to assess the existence of prescribed instructional strategies. This finding provides evidence that the Instrumental Enrichment curriculum was implemented as planned.

The perusal of the observation data within lesson component provides further evidence that teachers were implementing the specific instructional activities described in the curriculum. It was noteworthy that all of the listed instructional activities when observed were found to have been used ninety percent (90 %) or more of the time within the four lesson components. However, it can also be seen that there were some potential IE lesson instructional characteristics which were not seen in a substantial number of the observed clasrooms. For example, the introductory lesson component typically did not provide the teacher with an opportunity to demonstrate why a particular instrumental enrichment strategy worked and often did not indicate that there could be self checking of the developed strategy. It may be that some of the lessons did not lend themselves to demonstration of the "why" or the "how to check" for the strategy under study. An inspection of the number of missing responses in the independent work lesson component of instructional lessons suggests that the majority of the observed lessons did not provide opportunities for observing the use of the student as an instructional resource. For example, there were few classrooms where an opportunity existed for the student to assist in the instructional activities such as checking other students work or by helping other students to understand something about the lesson assignment. Also, there were few situations where a student could be expected to be finished with their independent work component of the lesson and thus there was little need to have other planned activities. These findings suggest the teacher still served as a principal instructor in the

classroom situation and that most of the time available for independent study was taken up with students working by themselves on the day's lesson.

The examination of the percentages of activities for Part III of the Lesson Observation Form indicated teachers were able to implement the IE instructional philosophy during the Discussion Component of the lesson. The emphasis during this portion was on how to do problem solving. Also, students were much more involved in this part of the lesson in comparison to the independent work period. Finally, it was noted that twenty percent of the lesson forms failed to contain reference to a summary lesson component. However, lesson summaries were appropriately implemented when observed.

Thus, the general characteristics of lessons were found to follow the IE instructional model in all of the 1984 observations as well as those in 1985-86. However, there was less demonstration of the use of affective support features of the IE instructional program in the second year as opposed to the first year (i.e., Praises often: 100 % in 1984 vs. 61 % in 1985-86; and Accepts often: 100 % in 1984 vs. 67 % in 1985-86). Teacher rejection remained at a desired low level for both years.

In conclusion, the Instrumental Enrichment instructional model does appear to have been appropriately implemented by Wake County Public School System Special Education teachers in selected middle schools. The evidence of the effectiveness of this instructional procedure can therefore be validly based upon the academic and behavioral evaluation measures used in this study.

An Evaluation of the Instrumental Enrichment Program's Second Year of Operation

John L. Wasik

BACKGROUND

The Instrumental Enrichment Program (hereafter designated as IE Program) was implemented at the seventh and eighth grade levels of selected Wake County Public School System middle schools (hereafter designated as WCPSS) during the 1984-85 academic school year. A federal grant obtained by WCPSS was used to provide support of the implementation of the IE Project. Training of teachers was accomplished through attendance at workshops run by WCPSS personnel and project consultants. The IE Project workshops began in the summer of 1984 and continued throughout the 1984-85 and 85-86 school years.

Students assigned to the treatment conditions received IE instruction in a class from the teachers who had participated in the IE training workshops. The remainder of the IE student's school day was to be spent in taking normal middle school academic and/or special education courses. Control students only took academic and/or special education courses as specified in their individual educational program.

METHOD

Evaluation Design

The evaluation design for determining the effectiveness of the IE Project specified the random assignment to treatment and control conditions of seventh and eighth grade students identified as emotionally handicapped (EH), educable mentally handicapped (EMH), and learning disabled (LD). A second cohort

of seventh grade special education students was enrolled in the study during the 1985-86 academic school year. Random assignment procedures were also followed in allocation of students within the second cohort to treatment and control conditions. Withdrawal requests made by parents of IE Program participants were honored whenever presented to project administrators. This resulted in a small number of study dropouts which accounted for less than five percent of the total study population.

Instrumentation and Data Collection Procedures

Standardized measures of intellectual status were obtained on project participants to provide an indication of the impact of the IE instructional program. The Otis-Lennon School Ability measure was administered on a pre and post basis to eighth grade IE project students during the 1984-85 academic school year and to seventh grade IE project students during the 1985-86 academic school year. The 1984-85 seventh grade students and 1985-86 eighth grade students were administered a post test only in 1985 and 1986, respectively. In addition, the Peabody Picture Vocabulary Test was individually administered by trained psychometricians to all treatment and control students within the seventh and eighth grades of both project years.

Teachers provided ratings on each of the IE study participants utilizing the Burks' Behavior Rating Scale at the end of the two project academic school years. The study design called for the 1984-85 eighth grade cohort to follow a normal curriculum based upon their IEP in the ninth grade. These students were followed up through the administration of an activities checklist designed by WCPSS personnel specifically to identify the level of

participation in ninth grade school activities of both IE instructed and control students.

Student demographic information was obtained from student cumulative folders on file at the individual schools. Missing information was obtained through teacher and/psychometrician interviews with the students. Among the demographic variables collected for possible analysis were student sex, race, and previous individual IQ score. Information collected on the parents included individual parent socio-economic-status and presence/absence in the home.

A final set of measures included the grades earned and recorded absences in courses taken by the control and IE students during the 1985-86 academic school year. Grade listings were obtained from the WCPSS Data Processing for all former project students from the 7th through 9th grades and weighted according to a scheme developed by IE Project personnel that provided higher weights for grades that were obtained in non-special education courses. The weighting procedure was described on Pages 31-32 of the project proposal.

A schematic of the study design as carried out by Wake County Public School System IE Project personnel during the 1984-86 academic school years is presented as Figure 1. The diagram follows the conventions developed by Campbell and Stanley for describing educational research studies (C=Control; E=IE; R=Random Assignment; O=Observation/Test; and X=Intervention of IE Treatment).

FIGURE 1

Schematic of IE Project Evaluation Design

Academic School Year

	1984-85					1985-86				
7th. Grade R	C	O				C	O		O	
	E	O				E	O	X	O	
8th. Grade R	C	O		O		C			O	
	E	O	X	O				X	O	
9th. Grade R						C			O	
						E			O	

The primary purpose of this report is to assess the impact of IE instruction on the intellectual and behavioral functioning of special education students in middle school grades. A secondary purpose was to assess the relationship of demographic variables and student program impact measures.

RESULTS

Sample Description

A demographic description of the IE project students can be determined from an analysis of the data collected from participating students in the 1985-86 academic school year. Tables 1-3 provide the frequency distribution of students by demographic characteristics of exceptionality, sex and race within the IE treatment and control conditions by grade.

TABLE 1

Numbers of Students Categorized by Exceptionality and Treatment

Grade 7

	Exceptionality						
	EH		EMH		LD		Total
Condition	n	%	n	%	n	%	n
Control	5	4.6	7	6.4	25	22.7	37
IE Instr.	10	9.1	12	10.9	51	46.4	73
Total	15		19		76		110

Grade 8

	Exceptionality						
	EH		EMH		LD		Total
Condition	n	%	n	%	n	%	n
Control	2	2.5	4	4.9	24	29.6	30
IE Instr.	1	1.6	10	12.4	40	49.4	51
Total	3		14		64		81

Grade 9

	Exceptionality						
	EH		EMH		LD		Total
Condition	n	%	n	%	n		n
Control	3	2.7	13	11.6	23	20.5	39
IE Instr.	3	2.7	26	23.2	44	39.3	73
Total	6		39		67		112

TABLE 2

Numbers of Students Categorized by Sex and Treatment

Grade 7

Condition	Sex: Female n	Female %	Male n	Male %	Total n
Control	11	10.0	26	23.6	37
IE Instr.	20	18.2	53	48.2	73
Total	31		79		110

Grade 8

Condition	Sex: Female n	Female %	Male n	Male %	Total n
Control	12	14.8	18	22.2	30
IE Instr.	18	22.2	33	40.7	51
Total	30		51		81

Grade 9

Condition	Sex: Female n	Female %	Male n	Male %	Total n
Control	19	13.5	35	25.0	54
IE Instr.	31	22.1	55	39.3	86
Total	50		90		140

Table 3

Numbers of Students Categorized by Race and Treatment

Grade 7

Condition	Race: Black n	Black %	White n	White %	Total n
Control	23	20.9	14	12.7	37
IE Instr.	37	33.6	36	32.7	73
Total	60		50		110

Table 3 Continued

Grade 8

Condition	Race: Black n	Black %	White n	White %	Total n
Control	18	22.2	12	14.8	30
IE Instr.	23	28.4	28	34.6	51
Total	41		40		81

Grade 9

Condition	Race: Black n	Black %	White n	White %	Total n
Control	39	27.8	15	10.7	54
IE Instr.	53	37.9	33	23.6	86
Total	92		48		140

The original design of the IE Project called for the enrollment of 150 students in the IE condition and control groups at each grade level of interest. However, it can be noted that this goal was not achieved for any of the groups. The largest number of project participants were found to be ninth grade students who had been exposed to the IE curriculum in the eighth grade. The next largest group was the seventh grade students of the 1985-86 cohort while the 1984-85 seventh grade cohort represented the smallest group from which data could be obtained. An inspection of the exceptionality categorization of students within the control and IE instructed conditions revealed two to three times as many Learning Disabled students as the two other categories combined. Students identified as educable mentally handicapped were next most frequent while students with emotional handicaps typically represented less than five percent of each group.

Consistent patterns were also found for students categorized by sex and race across grade levels. Males comprised the greatest proportion of students for whom a sex designation was available. Also, there were more black than white students at each grade level within the project.

Tables 4-6 provide a summary of the relationships among demographic characteristics of the students providing evaluation data.

Table 4

Numbers of Students Categorized by Exceptionality and Sex

Grade 7

	Exceptionality						
	EH		EMH		LD		Total
Sex	n	%	n	%	n	%	n
Female	5	4.6	7	6.4	19	17.3	31
Male	10	9.1	12	10.9	57	51.8	79
Total	15		19		56		110

Grade 8

	Exceptionality						
	EH		EMH		LD		Total
Sex	n	%	n	%	n	%	n
Female	0	0.0	6	7.4	24	29.6	30
Male	3	3.7	8	9.9	40	49.4	51
Total	4		14		64		81

Grade 9

	Exceptionality						
	EH		EMH		LD		Total
Sex	n	%	n	%	n	%	n
Female	1	0.8	24	18.9	22	17.3	47
Male	9	7.1	17	13.4	54	42.5	80
Total	10		41		76		127

Table 5

Numbers of Students Categorized by Exceptionality and Race

Grade 7

	Exceptionality						
	EH		EMH		LD		Total
Race	n	%	n	%	n	%	n
Black	4	3.4	14	12.7	43	39.1	61
White	11	10.0	5	4.6	33	30.0	49
Total	15		15		76		110

Grade 8

	Exceptionality						
	EH		EMH		LD		Total
Race	n	%	n	%	n	%	n
Black	2	2.5	10	12.4	29	35.8	41
White	1	1.2	4	4.9	35	43.2	40
Total	3		14		64		81

Grade 9

	Exceptionality						
	EH		EMH		LD		Total
	n	%	n	%	n	%	n
Black	6	4.7	34	26.8	44	34.7	83
White	4	3.2	7	5.5	32	25.2	42
Total	10		41		76		127

Table 6

Numbers of Students Categorized by Sex and Race

Grade 7

	Sex				
	Female		Male		Total
Race	n	%	n	%	n
Black	18	16.4	43	39.1	61
White	13	11.8	36	32.7	49
Total	31		79		110

Table 6 Continued

Grade 8

Race	Sex: Female n	Female %	Male n	Male %	Total n
Black	12	14.8	29	35.8	41
White	18	22.2	22	27.2	40
Total	30		51		81

Grade 9

Race	Sex: Female n	Female %	Male n	Male %	Total n
Black	37	26.4	55	33.9	92
White	13	9.3	35	25.0	48
Total	50		90		140

The learning disabled categorized students were also found to be most frequent when the sex or race of the IE Project participants was considered within grade level with one exception. There were more educable mentally handicapped than learning disabled females at the ninth grade level. Finally, the breakout of student sex by race categorization within grade level indicated that more males than females and more blacks than whites were to be found at each of the grade levels. There was less consistency of ranking of size of groups within the four sex by race combinations. Black males represented the single largest grouping of students at each of the three grade levels; white males represented the second largest grouping for seventh and eighth grades while black females comprised the second largest group of students in the ninth grade sample.

Summary statistics of the individually administered intelli-

gence test scores obtained for special education classification purposes from the student files are presented in Table 7.

Table 7

Summary Statistics for Intelligence Test Score by Treatment and Results of Analysis of Variance

Grade	Condition	Mean	St. Dev.	N	F	df	p
7	Control	83.40	15.79	37	0.91	1,95	.34
	IE Instr.	86.04	13.52	73			
8	Control	81.47	9.60	30	0.29	1,69	.59
	IE Instr.	82.90	12.25	51			

An analysis of variance of the group means revealed no significant differences in mean WISC-R IQ for the control and IE treatment conditions at the two grade levels. This finding provides support for a contention that the random assignment procedure was effective in establishing equivalent groups prior to the initiation of the Project.

Impact of IE Instructional Program

While there was an expectation that IE instruction would result in an increased level of academic performance, the program was also expected to effect student school behavior. These results are presented separately by type of measure.

Academic Aptitude

A comparison was made of control and IE instructed middle school grade students performance on the Otis-Lennon School Ability Test and Peabody Picture Voacabulary to provide a measure of impact of the IE project on academic aptitude. As noted earlier, an analysis of variance was performed on the treatment conditions with the individual schools serving as a blocking

factor in a randomized block design. The analysis of both measures indicated no statistically significant difference in student performance in the two treatment conditions for either grade level. Summa , statistics for both groups of students are summarized below in Table 8.

Table 8

Summary Statistics for Academic Aptitude Measures by Treatment

Grade	Condition	Otis Lennon Mean	Otis Lennon St. Dev.	Otis Lennon N	PPVT Mean	PPVT St. Dev.	PPVT N
7	Control	28.32	11.32	37	108.51	18.83	37
	IE Instructed	27.98	10.38	67	109.37	16.40	73
8	Control	28.96	10.01	25	107.53	16.64	30
	IE Instructed	30.40	13.13	48	111.90	17.44	51

Significant School effects were found for both academic aptitude measures at the 7th grade level: Otis-Lennon No. Correct measure $F=(7,86)=3.53, p<.01$ and PPVT $F=(7,95)=2.70, p<.05$ and for Otis-Lennon raw score at the 8th grade, $F(6,62)=2.99$, $p<.05$; the PPVT measure approached significance for eighth students, $F(6,69)=2.08$ $.05<p<.10$. The significant, and almost significant, school effects resulted from the fact that different middle schools attracted students of differing mean academic ability. Partial support for this conclusion is provided by the significant between school effect noted for the seventh grade students on the WISC-R IQ Test scores obtained prior to the initiation of the IE Project.

The reanalysis of the Otis-Lennon and PPVT test scores according to a treatment by exceptionality factorial design revealed no statistically significant differences in treatment

again as would be expected but that there were differences in student exceptionality group. The summary statistics and tests of significance are summarized in Table 9.

Table 9

Means and Sample Sizes and Tests of Significance for Exceptionality Factor

		Otis-Lennon					PPVT				
Grade	Except.	Mean	N	F	df	p	Mean	N	F	df	p
	EH	31.78	14				116.73	15			
7	EMH	17.94	18	11.93	2,95	.01	90.95	19	16.66	2,104	.01
	LD	30.00	69				112.10	76			
	EH	24.00	3				99.67	3			
8	EMH	21.57	14	3.96	2,67	.05	94.78	14	6.86	2, 75	.01
	LD	32.20	56				114.17	64			

The inspection of the tests of significance resulting from the analysis of variance revealed statistically significantly different levels of intellectual aptitude performance for the groups. At the seventh grade level, the EMH showed a significantly lower level of performance relative to the EH and LD students on both measures. While the EMH students also scored lowest at the eighth grade level, it is noted that the EH students also scored substantially lower than the LD students although still performing above the EMH students. With only three EH students, one cannot have a great deal of confidence in the observed n for this group. Thus, it is not possible to state whether the observed mean is characteristic of eighth grade EH students or a function of sampling variation. However, it is quite clear, due to the results observed at both the seventh and

eighth grades, that EMH students performed substantially below the LD students on the intellectual aptitude measures used in the study and that such findings were consistent both within the control and IE instructed groups.

The availability of pre and post measures for the seventh grade students provided an opportunity to calculate gain scores across groups and to determine if differential rates of growth resulted from exposure to IE instruction. Use of the randomized block design with condition as the treatment variable and school as blocks resulted in a nonsignificant difference in gain of No. correct from the fall to the spring for the control and IE instructed students, $F(1,75)=0.60$, $p=.44$, (Control: Mean=3.19, St. Dev.=6.76; IE Instructed: Mean=2.86, St. Dev.=6.45). School was not a significant variable in this analysis. The reanalysis of the gain scores as a factorial design with condition and student exceptionality as factors confirmed the similarity of gain shown by control and IE instructed students and indicated no statistically significant differences in mean gain in students categorized by their exceptionality, $F(2,84)=0.53$, $p=.66$.

IE Instructional Program Effect on Student Behavior

Teachers rated students using items comprising the 19 scales of the Burks' Behavior Rating Scale Form during the spring of 1986. These scores provide another means of assessing the effect of IE instruction on middle school grade students with special educational needs. The statistical analysis procedures utilized in this portion of the study followed closely the procedures utilized in the analysis of the academic cognitive measures described in the section above. The summary statistics on the

control and IE instructed groups of children for the 19 scales is presented by grade in Table 10.

Table 10

Burks' Behavior Rating Scales Summary Statistics by Group

Scale	Grade 7 Control (n=37) Mean	St. Dev.	IE Instructed (n=73) Mean	St. Dev.
1. Excessive Self Blame	7.32	2.33	7.18	3.25
2. Ecessive Anxiety	7.24	3.26	7.27	3.54
3. Excessive Withdrawal	8.54	3.06	9.40	4.94
4. Excessive Dependency	9.30	3.78	8.44	2.98
5. Poor Ego Strength	13.70	5.40	14.01	5.79
6. Poor Physical Strength	6.94	2.80	6.34	2.32
7. Poor Coordination	7.40	2.73	7.11	2.92
8. Poor Attendance	13.78	5.24	12.53	5.92
9. Poor Academics	13.57	4.49	12.05	4.90
10. Poor Attendance	10.51	4.86	10.08	5.96
11. Poor Impulse Control	9.19	5.06	8.53	5.38
12. Poor Reality Control	10.70	2.73	11.00	3.59
13. Poor Sense of Ident.	6.46	2.40	7.41	3.67
14. Excessive Suffering	10.76	3.73	11.20	5.42
15. Poor Anger Control	8.78	4.87	8.75	4.95
16. Exces. Sense of Pers.	8.70	4.86	7.64	4.29
17. Excessive Aggres.	9.40	3.76	10.41	5.85
18. Excessive Resistance	8.86	4.98	9.03	5.36
19. Poor Social Conformity	12.22	5.50	13.00	6.45

Table 10 Continued

Scale	Grade 8 Control (n=30) Mean	St. Dev.	IE Instructed (n=51) Mean	St. Dev.
1. Excessive Self Blame	6.70	2.55	7.31	3.64
2. Ecessive Anxiety	7.10	3.71	8.04	4.13
3. Excessive Withdrawal	8.10	3.62	8.84	4.25
4. Excessive Dependency	7.27	1.41	8.43	3.25
5. Poor Ego Strength	11.50	3.78	12.84	5.10
6. Poor Physical Strength	6.23	2.80	6.35	2.21
7. Poor Coordination	6.13	1.68	7.20	2.54
8. Poor Attendance	11.67	4.80	12.59	4.80
9. Poor Academics	11.10	5.20	12.86	5.09
10. Poor Attendance	7.83	2.92	8.56	4.36
11. Poor Impulse Control	7.63	3.76	7.61	4.17
12. Poor Reality Control	10.03	2.75	10.86	3.88
13. Poor Sense of Ident.	6.00	1.68	6.67	2.90
14. Excessive Suffering	9.93	4.29	10.53	4.50
15. Poor Anger Control	8.37	4.68	8.04	4.57
16. Exces. Sense of Pers.	6.60	3.02	6.84	3.03
17. Excessive Aggres.	8.73	4.37	8.59	4.06
18. Excessive Resistance	7.80	3.92	7.90	4.08
19. Poor Social Conformity	10.90	4.74	12.04	6.05

The analyses of variance revealed no statistically significant differences in IE instructed and control students on the ratings provided by the teachers at either grade level. Using a score of greater than 10 as representing an exceptional score, it

is interesting to note that IE Project students in both grades were ranked poor on the scales of Ego Strength, Intellectuality, Academics, Reality Contact, and Social Conformity while the seventh grade students were additionally rated as exceptionally poor on Attendance and showing Excessive Suffering. The results of this set of behavioral ratings do not present any evidence of the effectiveness of the IE instructional program in improving middle school grade special education student behavior in a class or school setting.

The two complementary analyses of variance carried additional information on the variables School and Exceptionality. A total of 9 of the seventh grade School Effects and 12 of the eighth grade School Effects of the possible 19 scales were statistically significant at the .05 level or better. Since the School Variable served as a blocking function to provide a more powerful statistical test of the treatment effect, the analysis suggests substantial differences in the behavioral rating mean level of the schools serving in the IE Project. The results of the statistically significant tests and associated means of Burks' Rating Scales for the Exceptionality factor are presented in Table 11.

It is noted upon inspection of the seventh grade means that Emotionally Handicapped students were rated highest on 7 of the 8 scales with a significant Exceptionality Effect while the EMH were rated highest on the Poor Physical Strength Scale. The eighth grade significant Exceptionality Effect in all cases resulted from the higher ratings given by teachers to Emotionally Handicapped students. Finally, the Burk Scales of (11) Poor

Impulse Control, (15) Poor Anger Control and (18) Poor Social Conformity were found to have significant Exceptionality Effects at both seventh and eighth grade levels. These scales particularly describe characteristics that would be noticeable in observation of EH students.

Table 11

Exceptionality Factor Tests of Signficance and Group Means

Grade 7

Burks Scale	F(2,104)	p	Exceptionality Means EH	EMH	LD
1	3.12	.05	8.80	7.53	6.84
4	3.80	.05	9.33	9.94	8.30
6	11.43	.01	6.13	8.79	6.06
10	4.54	.05	14.93	8.68	9.68
11	17.94	.01	15 7	7.58	7.76
15	13.60	.01	14.33	8.10	.87
16	4.50	.05	11.20	7.05	7.60
18	6.17	.01	13.27	7.84	8.41

Grade 8

Burks Scale	F(2,104)	p	Exceptionality Means EH	EMH	LD
11	3.63	.05	13.33	7.36	7.41
15	4.35	.05	14.67	8.71	7.73
17	4.56	.05	16.33	8.64	8.28
18	3.68	.05	13.67	7.50	7.67
19	5.92	.01	21.67	9.86	11.53

IE Instructional Program Effect on Student Ninth Grade Extracurricular Participation

Another set of data included ninth grade IE Project partici-

pant responses to items on an individually administered questionnaire asking about their levels of participation in extra-curricular activities. The questionnaire is attached as Appendix A.

Of the 140 ninth grade students contacted as part of the IE Project evaluation activities, 86 were identified as having received IE instruction as eighth grade students with the remaining 54 students identified as formally serving as eighth grade controls. Inspection of the questionnaire forms indicated that 30 (35 percent) of the IE instructed students reported participating in one or more extracurricular/non-academic courses activities as ninth grade students; the corresponding figures for the control students were 16 (30 percent) participants. However, the five percent difference favoring IE instructed students was not statistically significant, $z=0.64$, $p=.52$.

Additional analyses were performed on the data provided by ninth grade samples. These analyses were the same as those performed on the academic aptitude and behavior ratings. The measures available for analysis included number of activities reported by each student and mean level of activity for the students who reported performing one or more activities. The summary statistics for these two measures are presented below in Table 12 for the two ninth grade groups.

Table 12

Activity Participation Measure Summary Statistics by Group

Group	No. of Activities Mean	St. Dev.	N	Level of Particip. Mean	St. Dev.	N
Control	2.42	3.50	54	3.25	0.76	16
IE Instr.	1.88	2.98	86	2.83	0.74	30

Although inspection of means revealed the control groups to have had the higher means, the analyses of variance indicated that the differences were not statistically significant, No. of Activities $F(2,121)=0.69$, $p=.41$; Mean Participation Level $F(2,38)=0.93$, $p=.34$.

The complementary variables used in the two analyses of variance were found to be significant in the case of exceptionality for number of extracurricular activities, $F(2,121)=4.70$, $p<.01$. In this particular analysis, emotionally handicapped students reported substantially higher levels of participation (Mean=4.30) than did the other two groups (EMH Mean=1.15, LD=1.79).

Table 13 summarizes ninth grade student activity levels.

Table 13

Reported Frequency of Activity Participation by Group

Form Code	Activity	Group Control	IE Instructed
b	Basketball: Girls	1	2
d	Basketball: Jr. Varsity	1	3
f	Chorus	2	1
g	Cross Country	1	1
i	German Club	1	0
k	Gymnastics Club	0	1
l	Football: Jr. Varsity		4
m	Football: Varsity	0	1
r	Homecoming Activities	4	10
t	Interclub Council	0	1
v	Intramural Athletics	2	3

Table 13 Continued

Form Code	Activity	Group Control	IE Instructed
bb	Marching Band	0	3
ee	Photography Club	0	3
ff	Soccer Team	2	1
ii	Spirit Week	6	14
mm	Tennis Team	0	1
pp	V.I.C.A. Club	1	1
qq	Volleyball Team	0	1
rr	Wrestling Team	0	1
ss	Other Activities	4	9

A total of 20 different activities were reported by one or more ninth grade IE Project students. An inspection of Table 13 reveals the greatest levels of participation were in school sponsored spirit building activities such as Homecoming and Spirit Week. Participation in sports was the next most often frequently reported school related activity with a total of 8 reported having played either Junior level or Full Varsity Football while 5 other students reported having participated in intramural athletic programs. There was little reported participation in academically related clubs which is not surprising in view of the educational characteristics of IE Project students.

Program Impact on School Grades and Attendance

One of the expected outcomes of exposing students to the IE curriculum would be improved school performance. The two most important characteristics of school performance considered in this evaluation were student weighted-grade-point-average (WGPA)

and school attendance (ABS). In addition, project personnel were interested in determining if participation in the project would result in special education students meeting the academic course requirement through taking non-special education academic courses (ACAD). The number of course hours taken for the total academic year (HRS) represented a final variable available for analysis.

Two sets of analyses were performed on these four variables separately for students in grades seven, eight, and nine. The first set of analyses compared Control and IE student levels on the four school course/attendance measures through use of the independent groups "t test" while the second set of analyses were concerned with the determination of relationships among the four variables through the calculation of Pearson Product-Moment Correlations.

Table 14 presents the summary statistics and the results of the test of difference between groups for the four school course/ attendance measures by grade.

Table 14

Summary Statistics and Tests of Significance by Grade for Course/Attendance Variables

Grade 7

Variable	Control(N=53) Mean	St. Dev.	IE(N=73) Mean	St. Dev.	t
WGPA	2.45	1.09	2.58	0.92	-1.29
HRS	22.45	3.99	22.89	2.98	-0.67
ACAD	1.38	1.78	0.99	1.16	1.49
ABS	14.51	16.29	12.46	13.90	0.76

Table 14 Continued

Grade 8

Variable	Control(N=38) Mean	St. Dev.	IE(N=53) Mean	St. Dev.	t
WGPA	2.80	0.92	2.62	0.74	0.98
HRS	23.96	1.38	23.42	2.25	0.87
ACAD	1.62	1.60	0.92	1.44	2.15*
ABS	15.13	12.08	12.11	11.66	1.20

Grade 9

	Control(N=30)		IE(N=61)		
WGPA	2.18	0.96	2.17	1.05	0.09
HRS	23.17	5.15	23.06	4.04	0.10
ACAD	2.07	1.98	1.20	1.61	2.24*
ABS	17.47	18.07	17.18	19.94	0.06

* $p<.05$

Inspection of group academic grade performance reported in Table 14 reveals no significance difference in the weighted GPA (WGPA) which was based upon approximately the same number of course hours (HRS) for the two groups at each of the three grade levels. However, the significant difference for the ACAD variable at grade level eight and nine indicated the control students elected a greater number of non-special education academic courses to meet the core curriculum requirement.

No reliable differences in mean absences of the two groups were found although a slight increase in mean absences was noted as the grade level increased. The student mean absence rate was approximately seven percent for the seventh and eighth grades and approached ten percent for the ninth grade.

An additional level of analysis was performed where sex and school were used as control variables in two analyses of variance

of the four school measures with group as the treatment variable of interest. Sex was a significant variable only at the seventh grade level for weighted GPA, $F(1,108)=9.49$, $p<.01$, and course hours, $F(1,108)=4.42$, $p<.05$. Females had the higher grade point average (Females Mean=2.98; Males Mean=2.40) and higher number of course hours for the academic year (Females Mean=23.69; Males Mean=22.26).

Seventh grade students at the project schools differed in number of elected non-special education academic courses, $F(9,108)=2.53$, $p<.01$; number of total courses over the academic school year, $F(9,108)=2.29$, $p<.01$; and number of absences, $F(9,108)=3.57$, $p<.01$. The number of non-special education academic core courses elected by IE Project participants also differed among schools at the eighth grade, $F(9,72)=2.35$, $p<.05$ and ninth grade, $F(9,108)=3.57$, $p<.01$. levels. The significant between school effects likely reflect differences in school course scheduling policies and school student body characteristics.

Thus, the IE instructional experiences provided to special education students did not achieve two of the goals of the original project proposal; (1) to increase academic performance levels as represented by GPA and (2) to increase the number of non-special education courses taken to meet core curriculum requirements.

Since there was no significant group differences for three of the variables, the decision was made to pool the data from the the control group and IE treatment group within grade. Table 15 presents the intercorrelations among the four study variables separately by grade.

Table 15

Intercorrelations Among Course/Absence Measures by Grade

Grade 7

	WGPA	HRS	ACAD	ABS
WGPA	1.00	.09	.32	-.55
HRS		1.00	.06	-.14
ACAD			1.00	-.25
ABS				1.00

Grade 8

WGPA	1.00	.04	.40	-.22
HRS		1.00	.07	.20
ACAD			1.00	-.07
ABS				1.00

Grade 9

WGPA	1.00	.21	.49	-.68
HRS		1.00	.18	-.27
ACAD			1.00	-.19
ABS				1.00

Similar patterns in significant correlation coefficients were noted for students in the three grades. Statistically significant negative correlations were observed between weighted grade point average and absences at all three grade levels; 7th grade r=-0.55; 8th grade r=-0.22; and 9th grade r=-0.68. This finding indicated that failure to attend class resulted in lower end of year course grades. Another consistent finding was the positive correlation between number of non-special academic courses elected and weighted grade point average. However, this finding represented an artifact of the method used to compute the weighted grade point average. (Students received, on a per credit hour basis, two additional points for passing non-special education core academic courses and one additional point for passing general education courses in the computation of a weighted GPA.)

SUMMARY

The evaluation of the second year of operation of the IE Project was performed with data collected on exceptional education students in grades seven through nine who received IE instruction in the seventh and/or eighth grades or served as contact controls. The statistical analyses of school aptitude test measures, school grades and absences, and behavioral ratings scales for students in the seventh and eighth grades indicated no statistically significant differences in mean performance of IE instructed or control students. However, analyses did reveal significant differences in sex for grade point average and for number of course hours in favor of females at the seventh grade level. In addition, statistically significant differences were found between schools and type of special education student participating in the IE Project. Educable mentally handicapped students performed at lower levels on the school aptitude measures than did the emotionally handicapped or learning disabled students in both IE instructed and control groups. Differences were also found for several Burks' Behavioral Rating Scales for students in the exceptional education category. These analyses revealed the EMH students to have been rated as having more of a problem with behavioral control in social interaction situations. Finally, control students at the eighth grade levels selected a statistically significant greater number of non-special education academic core courses than did the IE instructed students at this grade level.

The level of absences, number of core academic courses, grade performance, and extracurricular activity level of ninth

grade students who had previously participated in the IE Project through receiving IE instruction or as contact controls were also assessed as part of the evaluation effort. There were no statistically signficant differences found in ninth grade IE instructed and control student rates of absenteeism or grade point average weighted to reflect participation in non-special education core academic courses. However, control students were found to have a significantly higher mean number of non-special education core academic courses in comparison to the IE instructed students. While IE instructed students reported a somewhat higher rate of extracurricular participation than did the control students, the difference in rates was not statistically significant nor were differences in student reported numbers and levels of excurricular activity.

In conclusion, exposure of middle school exceptional education students with learning and emotional handicaps to IE instruction did not result in significant gains in school academic aptitude ability, grade point average, level of absenteeism or behavior over that which would be expected of students taking a normal special education program. These results were consistent with the findings reported in the 1984-85 IE Project Evalua- Report.

APPENDIX A

Extracurricular Participation Survey Form

EXTRACURRICULAR PARTICIPATION SURVEY

DIRECTIONS: Below are extracurricular activities that took place in your school during the first semester.
(1) Indicate the extent to which you participated by circling the appropriate number.
(2) Indicate what you did in the space provided. (Member: President, Secretary, etc.)

ACTIVITIES	EXTENT OF YOUR PARTICIPATION				TIME/YOUR CONTRIBUTION AND/OR OFFICE HELD
	Always	Often	Sometimes	Did Not Participate	
a) Art Club	4	3	2	1	a) _____
b) Basketball: Girls' Team	4	3	2	1	b) _____
c) Basketball: Varsity Team	4	3	2	1	c) _____
d) Basketball: Jr. Varsity	4	3	2	1	d) _____
e) Cheerleaders: Jr. Varsity	4	3	2	1	e) _____
F) Chorua (either of them)	4	3	2	1	f) _____
g) Cross Country	4	3	2	1	g) _____
h) Drama Club	4	3	2	1	h) _____
i) German Club	4	3	2	1	i) _____
j) Graphics Club	4	3	2	1	j) _____
k) Gymnastics Team	4	3	2	1	k) _____
l) Football: Jr. Varsity	4	3	2	1	l) _____
m) Football: Varsity	4	3	2	1	m) _____
n) French Club	4	3	2	1	n) _____
o) FBLA	4	3	2	1	o) _____
p) FHA	4	3	2	1	p) _____
q) HERO Club	4	3	2	1	q) _____
r) Homecoming Activities	4	3	2	1	r) _____
s) Hope Haven Tutorials	4	3	2	1	s) _____

t)	Interclub Council	4	3	2	1	t) _____
u)	International Club	4	3	2	1	u) _____
	Intramurals (Which ones?):					
v)	_____	4	3	2	1	v) _____
w)	_____	4	3	2	1	w) _____
x)	_____	4	3	2	1	x) _____
y)	Junior Achievement	4	3	2	1	y) _____
z)	Latin Club	4	3	2	1	z) _____
aa)	Literary Magazine	4	3	2	1	aa) _____
bb)	Marching Band	4	3	2	1	bb) _____
cc)	Monogram Club	4	3	2	1	cc) _____
dd)	Oracle (Newspaper Staff)	4	3	2	1	dd) _____
ee)	Photography Club	4	3	2	1	ee) _____
ff)	Soccer Team	4	3	2	1	ff) _____
gg)	Sophomore Class Activities	4	3	2	1	gg) _____
hh)	Spanish Club	4	3	2	1	hh) _____
ii)	Spirit Week	4	3	2	1	ii) _____
jj)	Student Advisory Council	4	3	2	1	jj) _____
kk)	Student Council	4	3	2	1	kk) _____
ll)	Swim Team	4	3	2	1	ll) _____
mm)	Tennis Team	4	3	2	1	mm) _____
nn)	Torch (Yearbook Staff)	4	3	2	1	nn) _____
oo)	TV Production	4	3	2	1	oo) _____
pp)	V.I.C.A. Club	4	3	2	1	pp) _____
qq)	Volleyball	4	3	2	1	qq) _____
rr)	Wrestling Team	4	3	2	1	rr) _____

Others
(Which Ones?):

ss)	_____	4	3	2	1	ss) _____
tt)	_____	4	3	2	1	tt) _____
uu)	_____	4	3	2	1	uu) _____